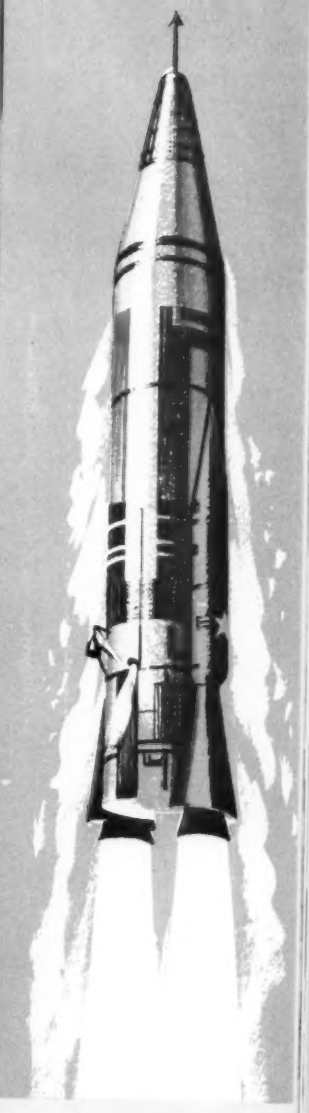
D301.6D:4/9

THE Airman

SEPTEMBER 1960

OFFICIAL JOURNAL OF THE AIR FORCE

GOVERNMENT PUBLICATIONS SEP 1 1960 CLEMSON LIBRARY



13 years of progress

Secretaries of the Air Force

W. Stuart Symington

Thomas K. Finletter

Harold E. Talbott

Donald A. Quarles

James H. Douglas

Dudley C. Sharp

GENERATIONS of LEADERSHIP

These are the men who have charted the course of Air Force destiny from official activation in September 1947 to the present time.

Chiefs of Staff, USAF

Top, left to right: Gen. Carl Spaatz, Gen. Hoyt S. Vandenberg. Bottom, Gen. Nathan F. Twining, Gen. Thomas D. White.

THE Airman

OFFICIAL JOURNAL OF THE AIR FORCE

Volume IV, Number 9 September 1960

Director of Information, Office of the Secretary of the Air Force, Maj. Gen. ARNO H. LUEHMAN. *Chief, Internal Information,* Col. ROGER B. PAYNE. *Editor,* Lt. Col. HARMON H. HARPER. *Assistant Editor,* Maj. ROBERT J. FLANAGAN. *Executive Editor,* TED R. STURM. *Departmental Editor,* SMSgt. HAROLD E. BAMFORD. *Art Director,* SMSgt. LESTER B. BOUNDS. *Production and Distribution,* RUSSELL M. WOODS.

USAF PERIODICAL 30-15

CONTENTS

WHEELS UP 2
The month the USAF was born

WHY OUR YOUNG OFFICERS ARE STAYING IN 6
Factors which affect career decisions

COMMAND POST 10
A key spot in peace or war

JUST ANOTHER AIRPLANE 14
Routine flight with a surprise ending

ASTIA 16
It means Armed Services Technical Information Agency

LIFELINES IN THE SKY 22
USAF response to those in need

DEATH AT PONTOISE 32
He earned the nation's highest award

SEARCH FOR KNOWLEDGE 35
How PACAF libraries serve the command

COMPLETED TRIANGLE 38
The Falcons will face the Army and Navy

THE PATHFINDERS 42
First flight to Alaska

AIR FORCE ATHLETES 45
They train for the Olympics

YOU CAN, TOO, EAT THE DAISIES 46
Survival training for kids

DEPARTMENTS

LETTERS TO THE EDITOR 1
SLANTS ON SPACE . . . 20
AIRMAN'S WORLD . . . 27
YOU SHOULD KNOW . . 41

Editorial Office: THE AIRMAN, Room 2-206 Tempo E, 4th and Adams Drive, S. W., Washington 25, D. C. Telephone, OXford 6-7393.

THE AIRMAN is primarily a medium for the exchange of ideas and information among Air Force personnel. Readers are encouraged to submit articles, short subjects, photographs, and artwork.

Use of funds for printing this publication approved by the Secretary of the Air Force and the Director of the Bureau of the Budget, June 9, 1959.

LETTERS TO THE EDITOR

Identification

Sir: On page 15 of the June issue (*Letters to the Editor*) you sought identification of the pilot shown on the right in the photo. The gentleman is Maj. Henry Lee Watson who was stationed at McCook Field, Ohio, during the early '20s. Major Watson left the service as a lieutenant colonel about the mid-20s and lived in California until his death. Incidentally, at Watsons are a very military family. One of the major's sons died while at the New Mexico Military Institute in 1930; a second was killed in a bomber crash in the Pacific in 1944; and the third is a naval officer who, I believe, is still on active duty.

Lt. Col. F. C. Robertson
Olmstead AFB, Pa.

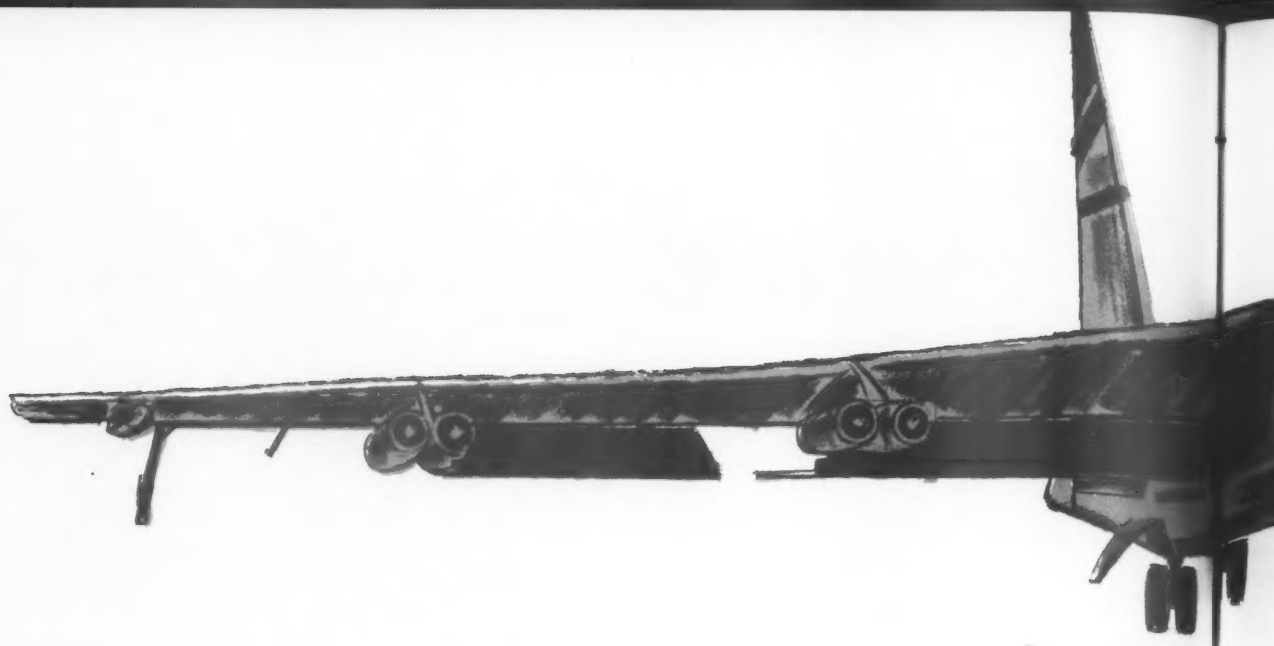
Sir: While reading your article Tomorrow's Officers in the June issue of THE AIRMAN, I noted that you allowed an error to creep in on page 30. The man sitting in the left seat of the T-37 is identified as a University of Virginia AFROTC cadet when, in reality, he is Lt. Jimmie C. Smith, presently assigned to the 814th Combat Support Group at this SAC station.

SSgt. Warren Havery
Westover AFB, Mass.

• *Sorry, Sergeant Havery, but it is you who made the mistake. Lieutenant Smith indicates that he was the subject of a very similar photo recently; however, while he admits the cadet in the cited picture could probably pass for his double, he denies that it is of him.*

★ ★ ★

(Continued on page 26)



WHEELS UP!

by TSgt. John K. O'Doherty
Airman Staff

ON September 18, 1947, Fred M. Vinson, Chief Justice of the United States, administered the oath of office to W. Stuart Symington, first Secretary of the Air Force. A week later, Gen. Carl Spaatz became the first Chief of Staff as the United States Air Force assumed equal status with the Army and Navy in the Department of Defense.

This official designation of status marks a significant occasion in airpower history. Creation of the Department of the Air Force at last accorded official recognition to the dedicated efforts of pioneer airmen.

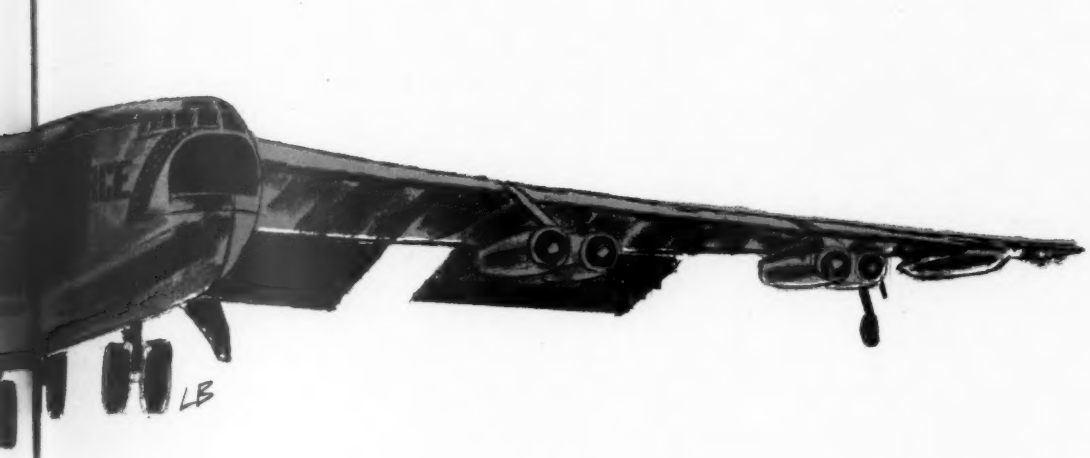
The airplane made its initial appearance on the military scene at about the same time as a number of other innovations in weaponry. Like the armored tank introduced by the British in 1916, the potentialities of the airplane were not fully appreciated in the beginning, and considerable time was to pass before airpower was accepted as a distinctive military system rather than an adjunct of ground forces. But step by step and year by year the crusade for recognition moved forward as the champions of airpower shouted their convictions from the housetops.

In June of 1941 the War Department created the Army Air Forces, granting a degree of autonomy to the air arm. In the reorganization of the War Department in 1942, the Army Air Forces was made coequal with Army Ground Forces and Army Service Forces, thus conveying a greater measure of independence.

World War II produced a number of new factors to confront national leaders responsible for adapting the sign-posts of the past into policy for the future. The outstanding significance of airpower in modern warfare was recognized by all who participated in the conflict or who had an opportunity to evaluate the results of aerial offensive. It was obvious that the strategic capability demonstrated so effectively in both theaters of combat must govern the place accorded to airpower in plans for coordination and organization of resources and skills for national defense.

The National Security Act of 1947, providing for a separate Department of the Air Force, not only established airpower as the nation's first line of defense and chief hope for maintaining the peace, but completely vindicated the efforts of Foulois, Mitchell, Patrick, Kern, and the other stalwarts who had pursued the vision over the years.

The newly created Air Force, a full-fledged military department, faced its expanded responsibilities as the pattern of events impelled the United States to assume leadership of the Free World. In one sense, the world was at peace in 1947; but it was a peace without tranquility as a variety of straining forces threatened to split the fabric of international relationships in a dozen directions. Mercifully, the horrors of global war were relegated to history, but many wounds were still unhealed and fresh blood was being spilled on the ground in



September is anniversary month of the USAF. A glimpse at the tangled web of world affairs in 1947 reveals some of the factors dominating 13 years of progress and development.

several parts of the world.

It was these forces, some of them distinct and understandable—others ominously obscure—that shaped the destiny of the Air Force for the years ahead.

The Cold War between East and West became clearly evident when the Soviet Union demonstrated a reluctance to comply with agreements made with the Allies during the wartime conferences at Yalta and Potsdam. As this policy of noncooperation became unmistakably clear from 1945 forward, Sir Winston Churchill remarked that "an iron curtain has descended across the continent" of Europe. Repeated use of the veto by the Soviet Union in the Security Council of the United Nations frustrated efforts by leading nations of the world to find solutions for the pressing problems of the period. At the same time, this stalling process by the Soviet Union was synchronized with a political assault on Eastern Europe backed by the power of the Red Army.

A Communist dictatorship was established in Albania in 1946. During the same year Communist forces in Bulgaria supported a movement, the "Fatherland Front," which in a one-ticket election abolished the monarchy and sold the political integrity of Bulgaria to Stalin.

In 1947 the pattern of Communist expansion became even more blatantly obvious. Stalin rejected international supervision of free elections in Poland, with the result that the election was completely subverted by the Communists. In nearby Rumania a communist-led government forced the abdication of King Michael and proclaimed a "Peoples Republic." On May 30, 1947, Hungarian communists ousted the patriot Premier Ferenc Nagy and installed their own government as a puppet of Moscow.

At this same time Eduard Benes was nearing the end of his valiant struggle to maintain democracy in Czechoslovakia. Benes was forced to accept the Communist, Klement Gottwald, as Prime Minister. Shortly thereafter, Gottwald organized a communist government and introduced the totalitarian system of one-party elections to Czechoslovakia.

In Greece, traditional fountain head of democracy, a bloody contest was in progress as bands of Communist guerrillas swooped down from the mountains of Albania and Yugoslavia to plunder the farms and villages and carry thousands of children off to oblivion. For two and a half tragic years, Greek fought Greek as Communist factions, armed and supplied by Moscow and the satellites, struggled to seize control of the country.

On the other side of the world, the pattern of aggression was equally direct and violent. On the mainland of China the Nationalist armies of Chiang Kai-shek fought a losing battle against Communists armed with captured Japanese weapons. In Southeast Asia,

tiny Laos proclaimed a new constitution on May 11, 1947, and Communist militarists endeavored to exploit the new-found nationalism of Laos, Vietnam, and Cambodia. Here in the rice paddies and jungles of what was once Indochina, a French Expeditionary Force was slowly bleeding its life out in a war destined to drag on until 1954.

The Republic of Pakistan was established in August of 1947, but violent disagreement with India over the province of Kashmir threatened to engulf the continent in a major war. And in Indonesia, nationalist forces fought to sever colonial ties with the Dutch, while the Communists looked on and licked their chops on the sidelines.

The General Assembly of the United Nations in 1947 debated the fate of thousands of refugees uprooted by the war and its aftermaths. The partition of Palestine posed a knotty problem for the Assembly, and when Israel proclaimed her independence she was attacked by five neighboring Arab nations. A Russian veto of June 22, 1947, prevented the Security Council of the U.N. from approving the "Baruch plan" for inspection and control of nuclear devices.

This gloomy and unpromising arrangement of world affairs in 1947 was relieved by an occasional small flicker of hope. On March 21, the "Truman Doctrine" was enunciated in President Truman's request to Congress for a $400 million loan for assistance to Greece and Turkey. The Congress approved the loan in May as the United States embarked on the first positive steps aimed at stemming the on-rushing tide of Communism.

In a speech delivered at Harvard University on June 5, 1947, Secretary of State George C. Marshall proposed a plan under which the United States would extend financial assistance to any European country willing to share in the task of recovery from the economic disorder following the war. General Marshall's farsighted proposal led to the Paris Economic Conference of July 1947, and the U.S. Congress authorized spending $12 billion in aid over three and a half years.

The Marshall Plan was intended originally to include the countries of eastern Europe—even the Soviet Union and Germany—as well as the wartime allies of the West. "Our policy," said General Marshall, "is directed not against any country or doctrine, but against hunger, poverty, desperation, and chaos." Stalin brusquely rejected the idea, and Soviet policy subsequently maneuvered to frustrate the program whenever possible.

The Marshall Plan, nevertheless, can be credited with restoring economic health to the countries of Free Europe and halting the march of Communism for a time. The European Recovery Program—official designation for the Marshall Plan—planted the seed for the present-day Mutual Security Program, one of the most valuable instruments available to the western world in warding off the danger of subversion and oppression.

(The Marshall Plan was based on direct assistance from the United States. Under the Mutual Security Program, the U.S., England, France, Canada, West Germany, Japan, and Italy all contribute to helping the people of newly developing countries in their struggle against the evils of hunger, poverty, disease, and illiteracy. In the case of the United Kingdom and France the proportion of national income devoted to military and economic assistance already approximates the share of U.S. national income devoted to these programs.)

Another event of far-reaching significance in 1947 was international agreement on the Treaty of Rio de Janeiro. On September 2, all states of the American continent except Nicaragua, Ecuador, and Canada signed the Rio Treaty forming a regional alliance for mutual self-defense within the provisions of the Charter of the United Nations. This historic agreement was forerunner of the extensive treaty system, including NATO and SEATO, by which the United States is now allied with more than 40 nations of the Free World.

This, then, is how the cards were stacked in 1947; this is the deck from which fate was to deal to the Air Force such challenging hands as the Berlin Airlift, the contest in Korea with all its imposed political restrictions, the hair-trigger tension of Suez, and half a hundred others up to the recent crises of Lebanon and Formosa.

The vigorous policies represented in the Truman Doctrine and the Marshall Plan were applied in the face of virulent, bitter Communist opposition. Propaganda emanating from Moscow and its international information agencies endeavored to read specious, Machiavellian motives into every transaction. Success of the programs was possible only because of the implicit warning that American airpower stood behind American foreign policy. It was manifest, even to diehard skeptics in uniform, that the Air Force with its atomic weapons and delivery capability was the keystone of American national security, and from this point forward both the responsibility and capability of airpower were expanded into new dimensions.

The Army Air Forces emerged from World War II covered with glory and with more than two and a quarter million men on its rosters. By May of 1947 there was only a handful over 300,000 present for duty. Aircrew personnel dropped from 413,000 on VJ-Day to 24,000 by June, 1947. More than 90 percent of maintenance personnel—the very heartbeat of airpower—were lost in the great demobilization after 1945. In January of 1947 the combat strength of the Air Force consisted of 52 groups, but fully 50 were hopelessly undermanned with only about 18 percent of aircraft realistically categorized as combat ready.

A vast array of air bases was built during the war and at the end of September 1945 the AAF was occupying nearly 2,000 installations. By the end of 1947 there were fewer than 100 active air bases in the United States, and only a handful overseas for the accommodation of occupation air forces.

The B-17 was obsolete, and although the B-29 could not reach intercontinental targets from the United States it was still the backbone of the bombardment capability. The first improved postwar bombers—the B-50 and B-36—did not appear in combat wings until 1948. In 1947 the two-engine B-45 jet bomber and the F-84 jet fighter were introduced into tactical units to join the F-80, first operational jet in the Air Force. It was in this year that the Air Force changed the prefix for fighters from P to F, and established B as the prefix for all bombers. The A-26, one of the few WW II planes still considered current, became the B-26. In transport aircraft, the twin-boom C-82 was the latest thing, but requirements for the most part were fulfilled by the reliable veterans the C-54 and C-47.

It was on this spindly foundation in the magic year 1947 that Spaatz, Vandenberg, Norstad, McKee with their associates began to build the airpower structure necessary to support the policies of the United States as leader of the Free World in the struggle against Communism. When Mr. Symington opened the office of the Secretary of the Air Force in September he had a staff of four officers and 11 civilians.

A great quantity of fast-flowing air has passed over the wings of Air Force aircraft in the years from that day to this. Many brave men have died with their boots on, and numbers of the pioneers have moved along to well-earned, graceful retirement. On the thirteenth anniversary of "wheels up" in 1947 more than 20,000 aircraft and an impressive arsenal of missiles, rockets, and exploratory space vehicles attest to the fact that the seeds planted by the airpower pioneers fell on fertile ground—and freedom endures with encouraging strength in the Free World.

WHY OUR YOUNG OFFICERS ARE STAYING IN

Increased opportunities, higher pay, and new policies have made the difference

by 1st Lt. Brian T. Sheehan, *Airman Staff*

In 1956, only six out of ten Air Force officers planned to make the Air Force a career.

The remaining 40 percent constituted a mass exodus that had to be stopped or eventually the Air Force would find itself top-heavy with brass, virtually stripped of depth and experience among its junior officers, and devoid of qualified people to occupy top rungs of command and staff as time took its inevitable toll of incumbents.

Today this problem has been largely licked. Right now eight out of every 10 officers on active duty are planning an Air Force career. They like what they're doing, feel the service offers many career opportunities, and enjoy their pay, retirement prospects, and prestige.

All this, and a lot more, was revealed recently in Washington, D. C., when Lt. Gen. Truman H. Landon, USAF Deputy Chief of Staff, Personnel, released a report showing why officers of all ages are staying in the service. The report, a comparison of officer retention facts and figures between 1956-59, explains why our Air Force has the most competent officer corps in the world.

Eight of Ten Stay In

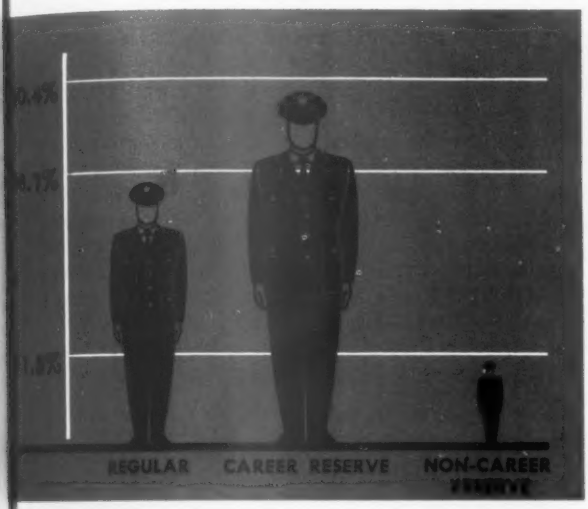
New facts revealed show that more than 38 percent of our total officer strength of 127,353 men are regulars, while over 50 percent of all officers are "career-reserves." Equally impressive is that a meager 11 percent of all officers plan to separate.

Reasons why so many officers are staying in are simple. The 1958 Pay Act, the Regular Officer Augmentation Program, and the Officers Career Management Program (See *Roadmap to Your Future*, The Airman, April '59) have taken many personal and professional bumps out of service life. Add to this the sweeping new personnel policies such as dislocation allowances and more educational opportunities, plus better housing and less moving, and it's easily understood why a service career is more desirable than before.

As a matter of fact, if an officer has five years' service today it's almost a sure thing he's going to stay in his blue suit for a long, rewarding career. Ninety-four percent of all officers with more than five years' service are career officers. The feeling "if it's been good this long it will be good in the future" is a dominant attitude.

The most difficult group to retain in the Air Force are the young lieutenants with college degrees fresh out of ROTC programs who want a chance to try their luck at civilian life. Even here, however, the picture has changed.

In 1958, about 58 percent of all lieutenants on active duty said they wanted a service career. The rest were undecided, or had positive civilian careers in mind. Now the shoe is on the other foot. Today more than 65 percent of all lieutenants plan an Air Force career. The remaining 35 percent are still undecided about the future, or else think they will separate.



as of December 1959

The men, who are officially tagged "noncareer reserves," total 14,616. This is 11 percent of all our officers. Significantly, 89 percent of all the lieutenants who have dates of separation are nonrated. Most of these men say their only gripe with the Air Force is that they haven't had a chance to do the work they like best, or that civilian life, for them, offers greater professional opportunities.

But General Landon thinks these young men should take another look at our dynamic aerospace force before jumping into other waters. "The Air Force," he said, "can give a bright young officer a challenging career with excellent rewards."

Who are these young, noncareer junior officers to whom General Landon refers? Where did they come from? Where are they now stationed and what are they doing?

You'll find that nearly all of these 14,616 DOS officers are young men with college degrees, specialized educations, and good futures. They're stationed everywhere from Tokyo to Torrejon and from Canada to South America. Generally, they're assigned to four professional work areas: technical support, combat and operations, professional, and scientific and engineering.

That all these groups are important is understood, but from a long-range point of view, the officers in the science and engineering fields who possess dates of separation are of particular interest to the Air Force. In numbers they total about 3,400 men. This group is of utmost importance to the future vitality of airpower.

For years the Air Force has been wondering why many of its talented young scientist-officers and engineers turned to civilian life. It now knows most of the reasons. They are well explained by a lieutenant assigned to ARDC at Wright-Patterson AFB.

Harry Ecker, 1st Lt., 24, is a Georgia Tech graduate who holds a master's degree in electrical engineering. He entered the Air Force 18 months ago, was assigned to Wright Air Development Division (WADD) as a project engineer working on defensive subsystems for the B-70.

"The Air Force has given me plenty of responsibility and I've enjoyed it," said Lieutenant Ecker. He was a team captain on the B-70 project and is now a project engineer in the ECM section of the navigation and guidance lab at WADD. If he had gone into industry after college it would have taken him years to reach this management level of engineering. Then why is he considering getting out?

"Frankly, I'd like a little more money and a modicum of prestige," said Lieutenant Ecker. He doesn't particularly care for moving every three years, especially after he's mastered a difficult job. Nor does he relish the thought of going into another command where his abilities might not be utilized.

On the positive side he enjoys his work, likes having the Air Force pay part of his graduate night-school study course, and knows he has a chance to get his Ph.D. with the Air Force. If he eventually becomes a career officer it will be because he's putting his country ahead of some of his personal desires.

The Air Force knows that money problems plague lower-grade officers, but it won't go along with the idea that R&D (Research and Development) officers have low prestige. General White believes that no one should be higher on the prestige scoreboard than such officers. Rating makes no difference. Of course, the individual must decide how important his job is. Most R&D officers resolve their positions this way: "We're engineers and darn proud of it."

Though it's true that many young officers like Lieutenant Ecker must make sacrifices, like moving, and changing commands now and then, they're bound to discover much the same thing in civilian life.

One large corporation has a standard question it asks all prospective employees before hiring. "Would you rather be an individual contributor and live in one place, or manage the affairs of others and move from area to area?"

It's a dull prospective employee who would say he would rather contribute to the company on an individual basis, and live in one city all his corporate life. Success lies in the other direction as far as most large firms are concerned.

Two Careers

What decision Lieutenant Ecker will make about an Air Force career is anyone's guess, but there are certain advantages he and other R&D officers might consider. One of them is having two careers in one lifetime. In other words, they might think seriously about spending 20 years in the Air Force, building up a good background of top-level experience, then later taking their retirement and going into industry.

Let's say Harry Ecker decided to stay in the service 20 years as a regular, or career-reserve officer. He would, first of all, remain assigned in a specialized area of work during his early, formative years. This is the basis for his future leadership role.

Later, when he becomes fully qualified, he will have an opportunity to take over larger responsibilities with commensurate increases in rank. It is not improbable he could stay in a specialized job, like the one he now has, and work his way up to colonel. There are a dozen paths to the top if you look for them.

Meanwhile he could attend school and earn his Ph.D. degree under Air Force sponsorship. Later, if he wanted to retire after 20 years research and development experience he would have little trouble locating a job on the civilian market.

The nation's economists are predicting that during the next 20 years there will be more high-level openings in industry and management than men qualified. Right now many officers with 14-20 years' command of scientific experience are worth from $8,000 to $25,000 in industry. But the military man, once he retires from active duty, has more flexibility than his civilian counterpart. Because of his monthly retirement check, which could be more than $450 a month after 20 years' service, he can pick his area and his job. In short, he's got the world on a string.

There are some financial matters to consider, too. Included in a nonrated lieutenant colonel's paycheck of $959 a month is $47.88 for subsistence and $136.80 for quarters. This subsistence and quarters allowance comes to $2,216.16 for a 12-month period. A civilian would pay anywhere from 15 to 18 percent income tax on this amount of money, but a military officer doesn't pay one red penny in taxes on allowances. It's tax free under existing laws.

Also worth mentioning are service travel opportunities. They can't be equalled anywhere. Overseas assignments and space-available travel are rare opportunities to see foreign countries, at a fraction of what it would cost a civilian. Recently 1st Lt. Donald Harris, a 1958 Naval Academy graduate, completed his advanced navigation training. He had accrued 40 days' leave. Lieutenant Harris decided to see Europe before reporting to March AFB as a SAC B-47 navigator. He caught a hop to McGuire AFB, N. J., waited one day for MATS space-available travel, and was on his way. He visited Spain, England, Denmark, France, and Germany.

". . . he would have little trouble locating a job on the civilian market."

"If he becomes a career officer it will be because he puts his country ahead of some personal desires."

Education and Promotion Opportunities

Aside from this there are broad educational programs available for all young, qualified officers. The Air Force Institute of Technology is a golden road to higher learning. Anyone who has earned an advanced degree knows the overbearing cost of graduate work. But if you're an Air Force officer being sent through school you take home a full paycheck monthly while Uncle Sam foots the bill for tuition and other educational expenses. And all you have to do is promise to spend two years in the service for every one year you attend school.

As far as promotion opportunities for young officers, they've never been better. Many senior officers are now nearing retirement age, and with their departure important job openings are available at the top of the Air Force structure. Junior officers will move up fast and eventually take over these important positions. As one colonel recently said during a personnel briefing at the Pentagon, "I wish the opportunities for advancement were as good when I was a lieutenant."

But who are some of the many young officers staying in the Air Force? One is 1st Lt. Charles Gulley, who entered the service after graduating from Tulane University in 1956 with an engineering degree. Because of his engineering background the Air Force sent him to the Officer's Communications School then located at Scott AFB, Ill. Later he was assigned as a communications officer to a squadron in Okinawa.

While overseas Lieutenant Gulley developed an interest in flying, applied for flying school and was accepted. He won his silver wings last May and is now attending a jet instructor's course at Craig AFB, Ala. Last March he was selected for a regular commission.

Why did Lieutenant Gulley decide on a service career? "I've enjoyed all my jobs and duty assignments, and believe I'll have an interesting, lucrative career," he said. He enjoys foreign travel; at 25 has nearly been around the world. What interests him most now is flying and gaining command experience; he's looking ahead to the day when he can play a more important role in the dynamic aerospace force.

Reasons such as Lieutenant Gulley cites are much the same as other junior officers who have decided to make the Air Force a career. The Officer Retention officials in Washington are happy with this trend, but want to see additional nonrated officers, especially those with science and engineering backgrounds, signing over as regulars or career reserves.

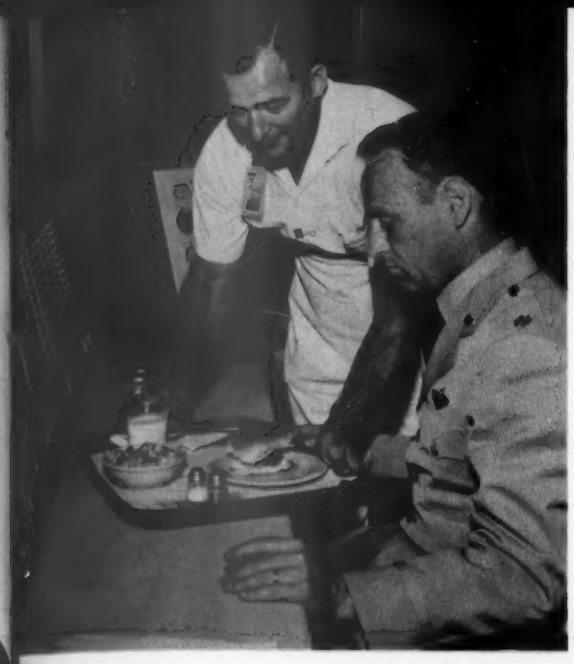
They point out that the shift to a composite aircraft-missile force makes it necessary for hundreds of technically qualified, nonrated officers to reconsider their career status.

In the final analysis, its what each individual wants out of life and how he wants to contribute to society that will govern whether he selects a military or civilian career. But Pentagon personnel officials believe that if a man's going to sign up he should do so now. It's possible that in the near future he won't have the opportunity. So many others—just as well qualified—may be in line ahead of him.

COMMAND POST

by Dave Karten, *Airman Staff*

Photos by SSgt. T. F. Gaidelis



Operations officer on duty at communications console takes time out for a modest lunch on the job. Important communications stations are never unattended as continual vigilance is maintained around the clock.

Opposite page. Command Post operations officers study the schedule of an overseas deployment so that they will be prepared to flight-follow the actual mission.

NERVE center of U. S. defense is an Air Force Command Post on 24-hour vigil deep in a Pentagon sub-basement.

In its locked and guarded rooms a small group of operations and communications specialists wait, every day and every night. Their important job: to pass emergency alert warnings swiftly to key military and civilian agencies.

In the far corners of the world, thousands of others keep vigil, too. If war should come—big or small, anywhere—lights would flash on the switchboard in the "inner sanctum" Air Force Command Post two decks below the Pentagon concourse. A crisp voice from halfway around the world would report: "The CINC Europe (or Pacific) has declared an emergency condition." Instantly, in less time than it takes to read this sentence, the network of command would come alive.

Through one of the Command Post's three push-button communications consoles an operations officer would immediately notify key decision-making people, and convene an emergency conference—in person in the daytime; via telephone at night.

Concurrently, a second operations officer in the post would alert military field commanders direct—CINCSAC, CINCNORAD, CINCAL (Alaska), CINCPAC (Pacific), CINCEUR (Europe), CINCNELM (North Atlantic and Mediterranean), CINCLANT (Atlantic) and CINCARIB (Caribbean)—and run a pre-cut tape that notifies selected governmental agencies and key personnel in 20 seconds flat. Action decisions made by the conferees, with the President's approval—whether to deploy TAC or send SAC with nuclear weapons—would instantly be passed to military commanders in the field for action *right now*.

Push that button and SAC headquarters in Omaha answers. This one is the Air Defense Command. Another alerts USAFE, that one PACAF. There is one for the high command of the Atlantic Fleet, one for the Army, another for the State Department. Through a permanently tied-in White House network the Command Post can reach the President at the White House, Gettysburg, Augusta or wherever he may be.

There are direct lines to several governmental agencies, and all of these can be linked for a conference of everyone—the national policy makers in Washington, the military high command, the generals or admirals across or on the high seas.

Within seconds after the Air Force Command Post receives a message it can ring up and exchange words with duty officers in similar control centers around the globe. Piped over a loudspeaker, the major commands report instantly and clearly over the "hot-line" cables and land lines. Radio communications supplement the cables.

Other modern facilities in the Pentagon's underground electronic fortress are designed to pass warning alerts in microseconds after an "attack." A bomb alarm map of the U. S., for example, lights up target areas where an "enemy" nuclear weapon might strike.

Watching the operations and communications specialists in the Command Post you get the impression that alertness is the key to every move these hand-picked airmen make.

Behind a glass partition separating the consoles from the rest of the communications center emergency action teams sit at three banks of desks—one for each area: European-African-Middle East, Western Hemisphere, Pacific-Far East. A defense emergency in any part of the world would galvanize the appropriate area team into immediate action.

At 0800 every morning one of the operations officers briefs senior officers of the air staff on the operational situation throughout the world. Action is immediately taken on any activity which might affect the status, deployment or employment of any of these units.

Besides round-the-clock alert watch, the Air Force Command Post performs many other important jobs. They include flight-following the President's aircraft, and coordinating civilian defense activities.

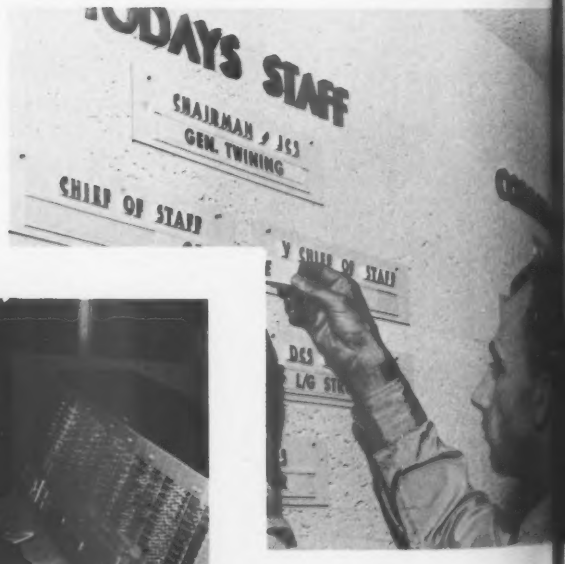
After duty hours the Air Force Command Post is the focal point for all important missions; uses its unique global communications net to operate mercy missions, help people, and save lives.

Take for instance, the recent American mercy airlift for the disaster-stricken people of Chile. When our Latin American neighbor to the south was torn by one of the century's longest and most violent earthquakes last spring, and thousands of families were struggling up out of the wreckage, a distress call received at the Command Post brought immediate action. Acting as focal point for the U. S. relief operation, the USAF Command Post coordinated the dispatch of MATS *Globemaster* transports carrying tons of food, clothing, medical supplies, two 400-bed Army field hospitals with hospital personnel, and 10 Army HU-1A helicopters to Santiago.

Messages relayed by the Command Post are frequently fraught with such high drama. Last June a quick-thinking airman assigned to the Air Force communications nerve center was responsible for prompt emergency actions to airlift a critically injured amateur skin diver to assistance.

At approximately 3:00 a. m., June 14, MSgt. Robert J. Inglis, on night duty in the Air Force Command Post, received a telephone call from the Air Force Duty Officer at Tinker AFB, Okla. The officer requested assistance for Floyd E. Goines, victim of a skin-diving accident. Goines, apparently suffering from a traumatic gas embolism, urgently required a specialized treatment in a compression-decompression chamber.

Sergeant Inglis, the senior noncommissioned officer on duty, was in the midst of an unusually heavy volume of action-traffic at the time. Nevertheless, while performing his other multifold duties, he immediately contacted the Navy and was informed that such a chamber was located at the Naval Weapons Plant in Washington, D. C. Contacting the Naval Weapons Plant, he learned that the chamber was operational and that a Navy doctor could meet the Air Force mercy flight from Tinker



AFB. He then alerted the operations officer at Bolling AFB, D. C., and obtained weather information.

As a result of cooperative Air Force-Navy teamwork and Sergeant Inglis' alertness, Mr. Goines was quickly airlifted to Washington, D. C., for the required specialized treatment that probably saved his life.

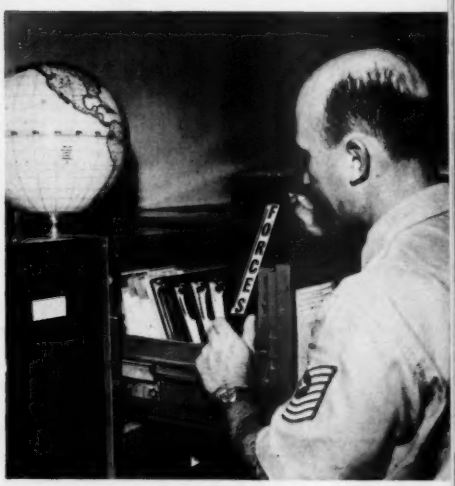
Whether the message is a "defense emergency" or a peaceful life-saving mercy mission, Air Force Command Post personnel react instantly. As General Curtis E. LeMay, Vice Chief of Staff, USAF, recently expressed it:

"Headquarters USAF must have the capability to react to emergency situations with a speed commensurate to the reaction time of our modern Air Force weapons."

The goal of the Air Force Command Post is to maintain a facility and necessary information on status of forces and current operations to make this possible.

At night the Pentagon is lonely and silent. Small islands of lights pick out spots in the deserted halls. But in the Command Post there is always brilliant light. In the communications nerve center lights flash on the console. Is there a trouble spot across the world? No, this time it's a Command Post officer making a routine "white express" check of the global communications net. Before he can move his finger from the button, a voice replies as one from the next room. The speaker is 7,000 miles away.

He pushes another button, and another, and another. Each time the response is instantaneous, loud and clear. The airmen speak from an island in the Pacific, from Thule Air Base, Greenland, from an air base in Saudi Arabia. If there is a "defense emergency," a border violation, a hurricane warning, a sabotage alert, serious accident, or a voice in the night somewhere crying for help, these men will know it—and pass the word.



The ever-changing pattern of world events, flowing like an endless cascade into the valley of human experience, poses a continuous challenge to airmen manning the Command Post. Col. Charles T. Moreland at the news service teletype measures the temperature and significance of everyday international happenings that go to make up the sum of contemporary human affairs. Deep in this underground crypt, the Argus-eyed vigilance and ceaseless alertness of Command Post personnel support the efforts of their fellow-airmen all over the world. Day and night flow together in a single stream as their watchfulness contributes to the security of the Free World.

As he left the bird squatting on the ramp near Palanquero he patted its nose.

To him it was more than

Just Another Airplan

by Capt. John W. Keeler, *Hq 13th Air Force*

THE TARGET was a stretch of North Korean railroad track between Haejue and Chinnampo. The mission was a "milk run." Flak was light and the weather good. I was on my first mission against the Communists.

Eight-seven-zero and I rolled into the dive bomb run from 13,000 feet. Eight-seven-zero was the number of the airplane I was flying—full nomenclature: Air Force 49-1870, F-80C, Lockheed *Shooting Star*.

The run was steep and I tensed as the airspeed climbed. We had overshot the target and I kicked the rudder to line up the sight on the stretch of track. I watched the altimeter unwind—6,000 feet—5,000 feet —4,000 feet. I thumbed the bomb release button and felt the two 1,000-pounders leave the wings. Then "870" and I were streaking away from enemy country.

In the year that followed I never flew "870" on another combat mission. She was assigned to another squadron. But many times in that year I saw her lined up for takeoff with other planes of her squadron, and many times we flew on the same missions.

Except for an entry in a log book, I might have forgotten "870." Newer, faster, swept-wing jets replaced the F-80s in Korea, while back in the States I trained and graduated through a progression of jet fighters. Eight-seven-zero and all F-80s were being shelved—replaced—turned in for later models.

The first American-made jet to see combat was being retired. Designed during World War II as a high-altitude interceptor to meet the threat of Germany's ME 262, the F-80 had turned up in Korea as a workhorse fighter-bomber. Lockheed engineers cringed at the loads of bombs, napalm, fuel tanks and rockets that were hung under the wings of this plane. Maximum range missions with maximum bomb loads were hourly occurrences for F-80s.

For nearly three years this rugged little jet fighter bore the brunt of the air-ground war in Korea. It pounded holes in the Communist lines at the Pusan Perimeter. It strafed truck convoys north of Pyongyang, and it tangled with Russian-made MIGs over the Yalu River. Pilots of the 8th Fighter-Bomber Wing in Korea flew F-80s on more than 63,000 combat sorties against the communists. Their planes dropped 50,000 tons of high explosives on the enemy.

But time and science were putting the F-80 out to pasture. By 1957 the *Shooting Star* was no longer in the Air Force operational inventory.

The F-80, however, was far from being a nonoperational jet in other parts of the world. Several Free World nations still fly the rugged little fighter in their first line of defense.

Recently Tactical Air Command's 4440th Aircraft Delivery Group was given responsibility for ferrying several F-80s to South American countries. These were

After years of active duty, AF 870 arrived at the graveyard for storage in the warm dry air of the desert.

not the first *Shooting Stars* the 4440th had delivered to Latin America; units of this flight were replacements to bolster the squadrons already using F-80s.

We picked up the planes in Oakland, Calif. It was like a reunion with old friends to walk on a ramp lined with newly painted and reconditioned F-80s.

In an old warehouse adjacent to the flight line we had located the historical records of the planes. The day before we took off, I leafed through the dusty file on the plane I was to fly. It read like a 20-year man's service record.

She came off the Lockheed assembly line in early June 1950. Six months later she was in the Far East assigned to the 80th Fighter-Bomber Squadron and flying two, three, sometimes four combat missions a day. For more than two years she ranged the North Korean skies from the "Double Bend" to Suiho, and then she was shipped back to the States.

After "reconditioning and modernizing" at Ontario, Calif., the craft was assigned to a fighter training wing at Nellis AFB, Nev. A year later she was at Hamilton AFB, Calif., with a reserve training center. Then to Selfridge AFB and Willow Run in Michigan with another reserve unit. In November 1956 she was flying with a squadron at Kirtland AFB, N. Mex., engaged in research including flying through atomic blast clouds.

Then came the cruelest blow of all. On October 23, 1957, she arrived at the "graveyard" at Davis-Monthan AFB in Arizona. Here, with several hundred other F-80s, she was parked for storage in the dry desert heat.

After seven years and 1,700 hours of flying time this F-80 was out to pasture. More than a hundred pilots had logged time in this airplane. There had been some rough days and flying hours during this time too. The records showed "damage from enemy action" in 1952 and "structural damage sustained when nose gear collapsed on landing" at Willow Run in 1956.

But world events were shaping that would change the status of this and several other F-80s in the Arizona desert. The Mutual Defense Pact called for additional planes from the United States to be assigned to squadrons in South American countries. In January of this year several F-80s arrived at Lockheed Air Service in Oakland, Calif., for "reconditioning and overhaul."

It is said that you don't get into an F-80; you put it on like a coat. I remembered this as I strapped in the tiny cockpit for takeoff on the first leg of the South American flight. It was the first time I had sat in the cockpit of a *Shooting Star* in seven years.

We climbed out over the Bay area in formation. I relaxed as the instrument panel became familiar and the feel of the controls came back to me. It was like coming home after a long absence. At 20,000 feet we leveled, and I kicked it out into spread formation. This was the type of battle formation we had flown in Korea. My thoughts drifted back to those days of combat missions and the role that this F-80, and the others, had played in stopping the Communists.

The flight across country was routine, but pleasant. Even when taunted at one refueling stop with, "Who you flying for captain, Smithsonian Institute?", I could only smile. I was flying a good airplane, and it felt good to be in it.

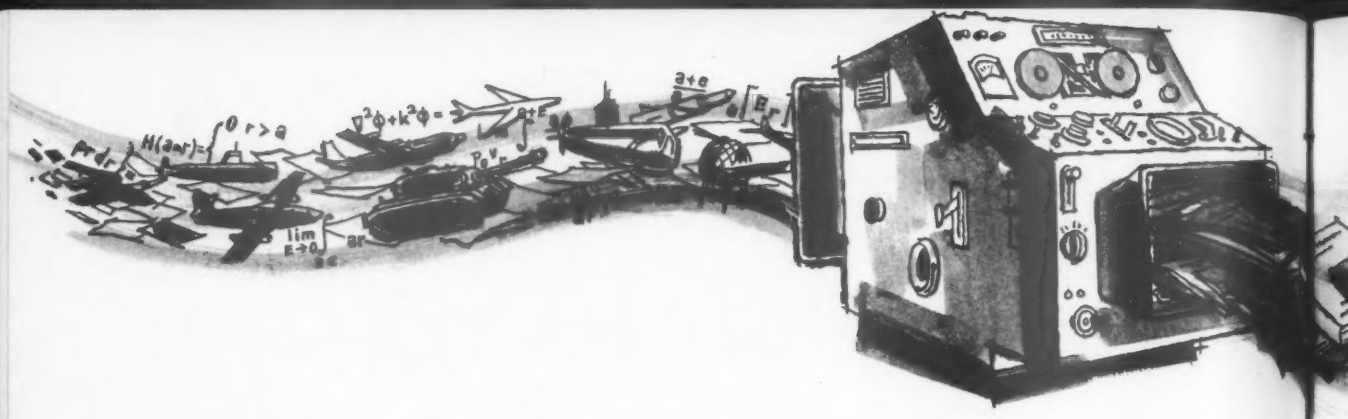
From Miami we went south over Cuba and into Kingston, Jamaica, then across the Caribbean to Panama. A short flight over the northern Andes and we were circling our destination.

We touched down smoothly and taxied to the ramp. In a matter of minutes the transfer papers were signed. I copies my flying time on a piece of note paper and smiled as I thought of the Form 5 clerk puzzling over the incongruous entry, "March 1960, ten hours, eight landings, F-80C."

I took my clothes bag from the gun bay and patted the nose of the plane as I closed the gunbay door. I turned as I walked away for one last look at this plane that had brought me these last 5,000 miles. I looked at the number on the tail and hoped that the new owner would keep the same designation.

You see, to me this was not just another airplane. This was the F-80 that I had flown on that first combat mission in Korea. This was "870."

At 20,000 feet we leveled, and I kicked it out into spread formation—like the battle formations we had flown against the Communists in the skies over Korea.



ASTIA

by Dave Karten, *Airman Staff*

The Armed Services Technic Info

A year after the war ended in Europe someone wrote to Wright Field, Ohio, saying he understood this country had acquired a collection of enemy war secrets, that many were now available to the public, and could he, please, be sent everything on German jet engines. The Air Documents Division of the Army Air Forces answered: "Sorry—but that would be 50 tons."

That 50 tons was just a small portion of the enormous mass of information piled up at the time in three places: Wright Field, the Library of Congress, and the Office of Technical Services, Department of Commerce. Tens of thousands of tons of material, representing large quantities of scientific, industrial, and military secrets of Nazi Germany had been collected. Included among the haul: $200 million worth of completed aeronautical research.

In 1944, before the Allied victory over the Nazi war machine was a *fait accompli,* the combined Chiefs of Staff did some advance planning. They created a number of military-civilian teams to follow the invading armies into Germany and to obtain information for early use against Japan. As the Allied armies continued to push the Germans from their strongholds, U. S. Air Force (Air Technical Intelligence) teams and similar organizations of the U. S. Navy and the British followed close behind collecting, as they went, tons upon tons of German aeronautical research materials.

The teams performed prodigies of ingenuity and tenacity. The German patent office had put some of its secret patents down a 1,600-foot mine shaft at Heringen, then piled liquid oxygen, in cylinders, on top of them. When found they were legible, but in such bad shape that a trip to the surface would make them disintegrate. A crew was lowered into the shaft to make a microfilm right there.

The morning the Germans surrendered to General Eisenhower at the schoolhouse in Rheims, Col. Donald L. Putt (now Lt. Gen., Ret.) arrived at Reichmarshal Goering's Aeronautical Research Institute near Brunswick, took command, and posted U. S. guards outside. That evening an American scientific team, headed by Dr. Theodore von Karman of CalTech, searched the Institute and found the first drawing of an aircraft with sweptback wings. A few days later the Chief Aerodynamicist in the Pentagon looked at the penciled sketch and said: "Looks like here's our answer on the jet bomber."

Other important documents were found in Himmler's private cave in a mountain at Hallein. Even though the side of the mountain had been dynamited down over the cave mouth, an American Air Technical Intelligence team found it.

One two-man team picked up a rumor that some records they sought might be hidden in a mountain. Scouring the region in a jeep, they stumbled onto a small woods road whose entrance carried the warning: Achtung! Minen!" Gingerly they inched their jeep in. Nothing happened. On a concrete dugout in the hill was another sign: "Opening will cause explosion."

"We tossed a coin," one member of the team said, "and the loser hitched the towrope to the dugout door, held his breath, and stepped on the gas." There was no explosion as the door was ripped from its hinges. The secret files were inside.

Spreading out all over Germany and Austria the ATI team ferreted out Nazi war secrets from everywhere. They found them under houses, in vaults of factories and laboratories, in a German general's wine cellar, the pockets of inconspicuous refugees, and the footlockers of souvenir-hunting GIs.

Thousands of German scientists worked their heads off for ten years, spending untold millions for equipment, laboratories, experiments, and research. With methodical German efficiency the results of all this effort and expense were put on paper, and every phase of it recorded in classified documents, reports, drawings, and

Information Agency cuts years from industrial and military research and development time.

photographs, thus creating a vast store of scientific knowledge and achievements.

Of the highest significance for the future were the German secrets in rocket power and guided missiles about which experts agreed the Nazis were ahead of us by at least ten years.

When the war ended the Germans had 138 types of guided missiles in production or development, using every known kind of remote control and fuse. Their A-4 rocket, just getting into large-scale production when the war ended, weighed 24,000 pounds and traveled 230 miles. It rose 60 miles above the earth, had a maximum speed of 3,735 miles per hour, and was either radio-controlled or self-guided to its target by gyroscopic means. Since its speed was supersonic, it could not be heard before it struck. The A-9 rocket coming along was bigger still—29,000 pounds—and had a flying range of 3,000 miles. Its unbelievable rate of speed was 5,870 miles per hour.

A long-range rocket-motored bomber which was never completed because of the war's quick ending, would have been capable of flight from Germany to New York in 40 minutes. Pilot-guided from a pressurized cabin, it would have flown at an altitude of 154 miles. With 100 bombers of this type the Germans hoped to destroy any city on earth in a few days' operation. The liberated documents disclosed the Germans were ahead of us in enough fields to make one shudder to think what might have happened if they could have held out another nine months or so.

Now came the big job: to process the hundreds of tons of aeronautical data and make the information available to American science and industry. In July 1945 an Air Documents Research Center of A-2 was organized in London, headed by Col. H. H. McCoy, a West Pointer with two aeronautical engineering degrees. From the continent the mass of documents, motion picture film, and microfilm records was flown to London and transferred to the Center's brick and concrete building at 59 Weymoth Street. It was at this time that Gen. Henry H. (Hap) Arnold, then Chief of the Army Air Forces, directed that an "Index Project" be initiated to process the millions of reports and documentary items collected.

When Colonel McCoy saw the pile of documents which prescreening had reduced to 250 tons (approximately 500,000 documents—sorting was accomplished at the rate of 10 tons a day), he had an idea. Why not catalog the German documents in such a manner that they would form the nucleus of a huge catalog embracing the entire science of aeronautics? It was Colonel McCoy's brainchild that eventually led to CADO (Central Air Documents Office) and the Armed Services Technical Information Agency (ASTIA), and saved millions of dollars and hundreds of thousands of valuable man-hours of research by avoiding duplication and wasted effort.

In 1945 the operation, together with its Navy Bureau of Aeronautics Liaison Officer, moved to Wright Field and became the Air Documents Division of Hq Air Materiel Command's Intelligence Department. The 500,000 documents were reduced to 55,000 and started on the processing run—catalogued, abstracted, and indexed, along with others which trickled in.

For the next two years the Air Documents Division, working with the Navy's Bureau of Aeronautics, served some 2,500 government contractors and agencies. It supplied them with a variety of air-technical intelligence data—printed reports and translations, microfilm copies of documents, card indexes, accession lists, and a *Technical Data Digest*.

This indexing and abstracting of the cream of German aeronautical research and development writings turned out to be one of the most fantastic projects in the annals of modern military intelligence. The program included condensation of an intensified aeronautical re-

ASTIA's electrostatic presses speedily reproduce full-size microfilmed scientific and technical reports.

search and development program covering a 12-year period in 28 months.

On a $4,000,000 budget the program indirectly returned to the U. S. taxpayer $18 for each dollar expended—for a total of $72,000,000.

The operation was accomplished by the AMC Intelligence Department's Air Documents Division by placing a foreign language technical documentary classification program on a completely mechanized mass-production basis. By November 1947 the Division completed its tremendous task. It had evaluated, classified, catalogued, indexed, and published (by microfilm) what was once 1,500 tons of documents.

The end result was to make available to qualified U. S. aircraft industries the product of more than a decade of the most intensified aeronautical research and development program the world had ever known—that of the misguided but brilliant German air force. It was estimated that the worth of actual research contained in the entire mass of documents, if reproduced in this country, would cost at least half a billion dollars of research and development funds and thousands of man-years of effort.

Some of the advanced design documents which made their way, after a long trek, from underground vaults in Munich and Goettingen to the drawing boards of American research engineers and aircraft and missile designers in Seattle, San Diego, San Antonio, and Long Island, contained many valuable secrets. They included, for instance, details of the ME-262, the world's first production jet-engine fighter; all the design, production, and test information needed to duplicate the deadly V-1 and V-2; and thousands of other revolutionary ideas and discoveries, from the sweptback wing for supersonic flight to anxiously guarded formulas for making synthetic rubber for airplane tires, a Mach 10 wind tunnel, a jet aircraft ejection seat, and a jet bomber and reconnaissance plane capable of 527 m.p.h. with a brake chute to stop it on a short runway.

As exploitation of the German documents—to which were later added thousands of Japanese air-technical documents—got into full swing, dissemination of this data to agencies and contractors of the Armed Forces entailed considerable duplication. The reason? Many organizations participating in the program were contractors to both the Air Force and the Navy.

Following unification of the military services in 1947 a Central Air Documents Office was established for the Army and Air Force, with offices at Dayton, Ohio. The Navy Research Section, under contract with the office of Naval Research, continued operating at the Library of Congress.

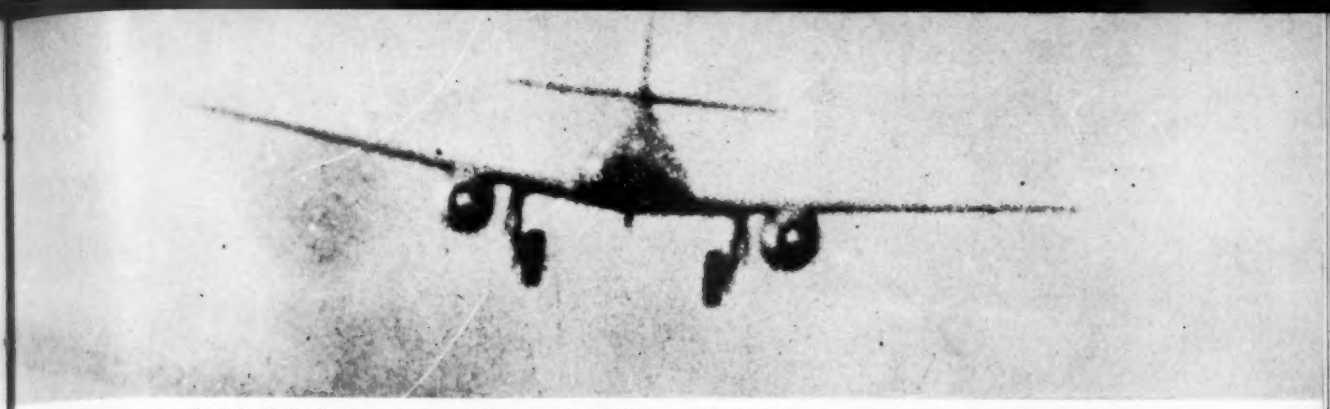
In the meantime the Central Air Documents Office (CADO) mission was expanded to include gathering all technical data—current and past, domestic and foreign—for the benefit of the entire military establishment, and processing this information so it could quickly be distributed on a selective basis to qualified agencies and contractors of the armed forces participating in the aeronautical phase of the National Research and Development Program.

To avoid duplication of effort, the Armed Services Technical Information Agency was established by Secretary of Defense George C. Marshall on May 14, 1951. It absorbed the functions of the Central Air Documents Office and the Navy Research Section. The Secretary of the Air Force was delegated responsibility for the operation and administration of ASTIA. And he, in turn, delegated this responsibility to the Air Research and Development Command.

In January 1958 the agency moved from Dayton to Washington, D. C. at Arlington Hall Station, Va., where it now houses one of the world's largest collections of unpublished research and development reports.

ASTIA's prime function is to provide scientists and engineers in military research and development with reports on work and findings on previous projects. Such information allows research personnel to keep abreast of progress and to apply findings to current work.

Unexploded German robot bomb, captured by 9th Air Force, gave U. S. a close look at the "nuisance" weapon.



Information on the Me-262, first operational German jet fighter, guided U. S. to advances in aircraft development.

The agency's collection of scientific reports now numbers more than 750,000. New titles are catalogued at a rate of 30,000 per year. About half a million copies of reports are furnished to requesters annually. ASTIA serves nearly 1,400 qualified industrial users, 1,400 military agencies, 17 NATO and SEATO countries.

Virtually all military R&D contracts require the contractor to furnish copies of reports on their work to ASTIA. These are screened, categorized, assigned reference numbers and catalogued. Titles and abstracts of the reports are listed in a semimonthly *Technical Abstract Bulletin* distributed to all qualified users. Copies of these reports may then be requested and furnished to those with an established need-to-know and military certification.

The DOD Scientific Information Center recently increased its efficiency an estimated 30 percent with new electronic computer equipment. Titles are now recorded on punched cards according to a *Thesaurus of ASTIA Descriptors* that categorizes subject matter of the reports. Another set of punched cards contains information on all qualified users—pertinent contract numbers, need-to-know, areas of interest.

A second phase of the mechanization program just completed will further expand the increase in efficiency to 40 percent.

A programmed third phase will permit even greater expansion of ASTIA services to military contractors.

All requests for copies are also submitted on punched cards which are fed into the computer along with the catalog and organization cards. The computer determines the validity of the request; prints out security classification information, inventory control data, reproduction instructions, and shipping labels. If the requested report isn't in stock, copies are made from the microfilm by continuous process using photoreproduction. Shipment is usually made within a few days from receipt of request.

In addition to reports, ASTIA furnishes bibliographies on specific subjects in the form of reproductions of catalog cards containing titles and abstracts of all available information on that particular subject. Printed bibliographies on major fields of science and technology in which there is wide interest are also made up as wanted and distributed.

ASTIA's storehouse of technical data, comprehensive bibliographic information, and announcement service enables scientists and engineers to have at their fingertips, in a matter of hours or days, the pertinent information they need to continue their progress in research and development.

The agency provides a central service for research technical data, efficient interchange of scientific and technical information—by supplying 500,000 reports a year to 2,800 military agencies and their civilian contractors—and promotes progress and economy in research and development.

Although the agency's services are obtainable by mail, more than five thousand scientists, engineers and librarians make use of the reference services provided by ASTIA's regional offices at New York, Dayton, San Francisco, Los Angeles and Arlington Hall, Va. Within a few minutes of his arrival at a regional office, a scientist can have an extensive reference list of current technical reports at his desk.

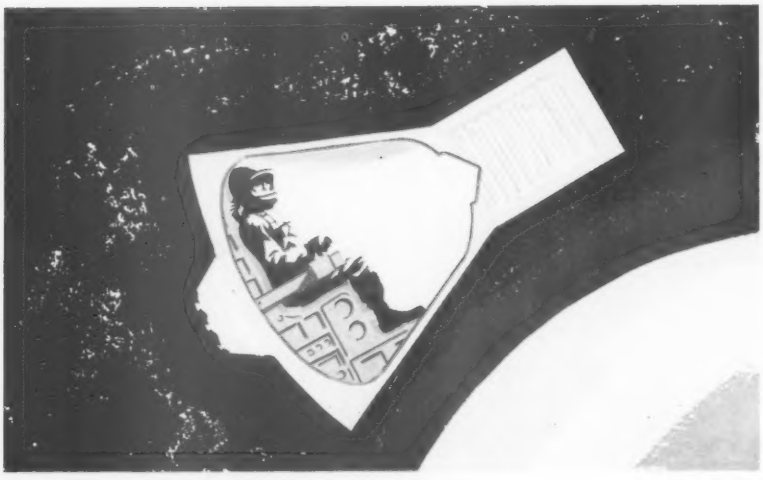
ASTIA has filled some strange requests for information but an Idaho potato farmer stumped them. He wanted reports to tell him how to make Irish whiskey out of his surplus potatoes.

ASTIA saves research and development time and that saving can be shown. But actually, ASTIA's most valuable service is immeasurable. In the reports it furnishes, our defense scientists and engineers find techniques and procedures that can inspire them to newer ideas and techniques, better weapon systems, greater uses of nuclear energy for peaceful purposes.

The Armed Services Technical Information Agency's vital role in our national security was succinctly summed up in a statement by Dr. James R. Killian Jr., Special Assistant to the President for Science and Technology: "Our very progress in science is dependent upon the free flow of scientific information, for the rate of scientific advance is determined in a large measure by the speed with which research findings are disseminated among scientists who can use them in further research."

And speed is ASTIA's goal as our far-flung research and development program goes on full throttle ahead, penetrating deeper and deeper into the mysteries that confront man.

GIANTS ON SPACE



Re-entry of an orbited vehicle carrying an astronaut involves a much greater heat problem than the re-entry of a nose cone or warhead from a ballistic missile. In the latter case the re-entry angle is relatively sharp, the deceleration forces greater than those the human body can withstand, and the exposure to intense heat generated by atmospheric friction is over in approximately 30 seconds. For manned spacecraft it is estimated that the re-entry process will require up to 50 minutes because they will be programmed to return to atmosphere at shallower angles and decelerate at slower rates. As a consequence the skin of the vehicle will be subject to heating by atmospheric friction over an extended period. At the anticipated velocity of 14,000 miles an hour or more, the molecular temperature around the nose could reach perilous levels between 15,000 and 18,000 degrees Fahrenheit. Unless this fierce heat is dissipated, the spacecraft would burn up just as meteors are consumed as they shoot through the increasingly denser layers of the atmosphere.

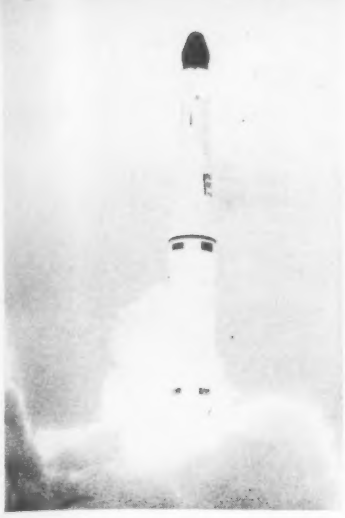
Research scientists now believe the heat problem can be solved by sheathing the vehicle's skin with a film of helium gas. Wind tunnel experiments have shown that when helium is ejected from the nose of a test device being blasted by a current of hot air, the onrushing current spreads the helium in a thin, continually flowing film over the device's exterior surface. The helium, in turn, prevents the hot shock wave layers impacting on the nose from transferring much of their heat to the device. The helium also absorbs most of the heat and carries it away. According to computations, a protective layer of helium only 1/16 of an inch thick flowing over the nose of a cone two feet in diameter would suffice to hold the skin temperature to a maximum of 2,500 degrees, a level well within the tolerance of certain known materials.

If the experimental findings prove valid with a test vehicle of operational proportions, then the implications for the country's manned spacecraft program are indeed most profound. The U. S. possesses the largest reserves of natural helium known to exist in the world, according to information currently available. The rarity of this inert gas as a natural resource, the expensive cost of processing it and the fact that the U. S. enjoys a monopoly on its production in commercial quantities has sharply limited the use of helium elsewhere in the world to date. It would appear that any other nation planning manned space flight but lacking access to an adequate supply of helium would find its program behind the eight-ball, at least until some alternate solution of the re-entry heating problem could be found.

Canadian research scientists estimate that in a hard lunar impact an instrumented capsule would have to withstand the effect of up to 100,000 Gs to function efficiently afterwards. However enormous this collision stress, laboratory experiments by Canadian Armament Research have developed reassuring evidence that it can be withstood successfully with a wide margin of safety. Miniaturized transmitting assembly units have been devised which have proved to retain virtually full operational effectiveness after being subjected to the equivalent of 500,000 Gs in controlled experiments.

With simple mental arithmetic you can compute the approximate range in terms of light-years for a radio telescope with a paraboloid antenna. Just divide the number of feet in its diameter by 10. Thus, the range of the 250-foot "dish" at Jodrell Bank comes out 25 light-years. A light-year is the distance visible electromagnetic energy travels in one year, or about 5,880,000,000,000 miles. A light-year is astronomy's unit for measuring stellar distances.

It is estimated that there are some 10,000 stars within 100 light-years of Earth. That distance equals about 588,000,000,000,000 miles.



With *Able-Star* the U. S. space research program has acquired a final rocket stage with demonstrated capability of cutting its engine in orbit and restarting it when necessary.

In its operational debut, the vehicle was teamed with the *Thor* to put up the navigation satellite, *Transit 1B*, from the Atlantic Missile Test Range at Cape Canaveral. After separating from the *Thor* booster, the *Able-Star* vehicle's engine fired for 4.3 minutes, cut out so the stage could coast for the next 19 minutes, then fired again for 13 seconds to achieve the desired orbital altitude where the payload package separated.

An advanced model of the original *Able* stage, *Able-Star* can generate a thrust of about 8,000 pounds. It burns three times as long as the *Able*. In a dozen test firings before the *Transit 1B* launch, it had a batting average of 1.000. It has been designated as the second-stage vehicle for the *Courier* communications satellite.

The *Able-Star* is already assured of a place in the space age Hall of Fame. It was the first vehicle to inject two functioning satellites into orbits at the same time. This occurred June 22 when it carried up *Transit II-A*, the second experimental satellite, and a solar radiation monitoring package in piggyback fashion from Cape Canaveral and sent them circling the earth in different ellipses.

What happened to the Linné Crater? That is one mystery astronomers hope to get some new light on when close-up photographs of the Moon's surface become possible and later by human investigation of the area when landings are made.

Here's the story. About a century and a quarter ago this crater, located in *Mare Serenitatis* (Sea of Serenity), was named for Karl von Linné (1707-78), the Swedish scientist who was the founder of modern systematic botany. One astronomer who studied it in the early 1830s has left this description: "the second most conspicuous on the (Mare) plain . . . it has a diameter of about six miles, is very deep, and can be seen under all conditions of illumination."

Linné was under regular study and observation until 1843, when the few men specializing in lunar research had their attentions diverted elsewhere. In 1866 they again trained their telescopes on the *Mare Serenitatis* area only to discover Linné had vanished. Instead of its wide rim and a bed, at least 1,000 feet deep, all they beheld was a powdery white splotch, quite small in size. Further telescopic examination disclosed the patch contained a shallow, domelike swelling, punctured by a single craterlet.

None of the explanations advanced for Linné's disappearance have satisfied astronomers during the decades since elapsed. A meteorite of approximately similar size might have been the instrument of destruction but scientists seem to think it would be a fantastic coincidence that such a direct hit could have been scored without leaving some telltale evidence on the smooth, regular surface of the surrounding plane. Volcanic action has been suggested, but most experts today tend to believe that the Moon's period of vulcanism ended many centuries ago after this satellite of the Earth had assumed most of its present appearance. Another theory advanced is that Linné may have eroded or flaked away. This has been rejected because such a process could not have produced the crater's eradication in the relatively short span of 23 years.

What happened to Linné, then? Science is still waiting patiently to find out. (Note: After fame came to the man after whom the crater was called, his name was Latinized to Carolus Linneaus. Some readers may find the name more familiar in that form.)

—WILLIAM A. KINNEY

Following 1866, hundreds of telescopes were trained on the moon in an effort to solve the mystery of the missing crater.

LIFELINES

The Berlin Airlift—Operation Vittles—*is still remembered as the classical challenge to postwar airlift capability, and was one of the first steps taken to stem the surge of Communist ambition in Europe. After the Russians closed off surface approaches to the city on June 25, 1948, the Combined Airlift Task Force supplied the needs of the population for 15 months completely by air—more than 2½ million tons of cargo in nearly 300,000 flights*

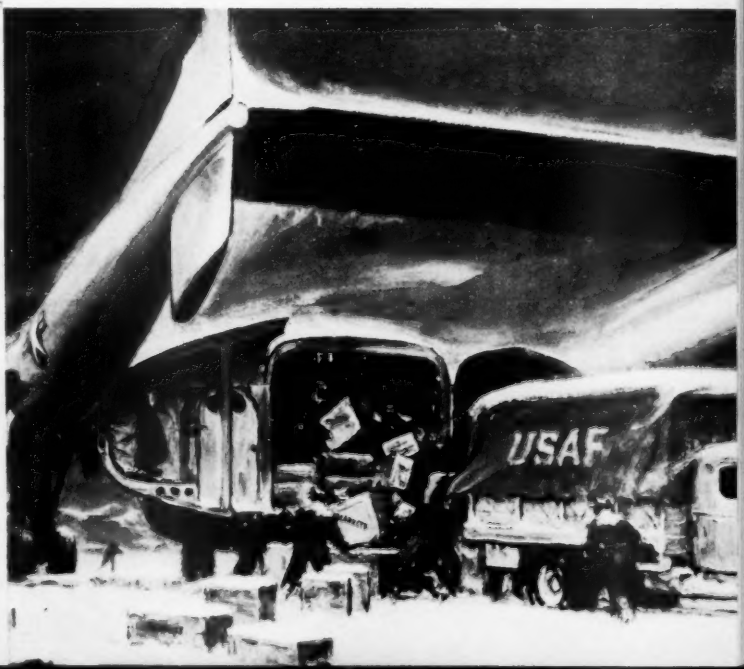
Western United States, Winter 1948-49. When millions of cattle and sheep were threatened with starvation because of a heavy blanket of snow covering the western plains, Operation Haylift *airdropped tons of hay over Nevada, Utah, Colorado, and Nebraska. Hundreds of elk and other wild creatures were also saved as the "hay kickers" pushed bales of fodder overboard.*

Hungary, Winter 1956-57. When thousands of Hungarians fled their homes to escape terrible reprisals by Soviet forces following the Hungarian uprising, USAF in Operation Safe Haven *transported the refugees to new homes in the Free World. MATS aircraft airlifted 14,263 Hungarians from Germany to the United States.*

Painting by Thornton Utz

...in the Sky

In addition to its responsibility as a powerful element in the protective shield surrounding the Free World, USAF airpower year in and year out supports the goals of American statesmanship, and—in times of danger, disaster, or distress—the highest humanitarian ideals of the American people. Some of these missions may be touched by important political implications; others often pass unnoticed—unheralded and unsung. A good many are inspired by the simple, neighborly desire to help a friend in need. As a tribute to the men who personally contributed to the success of so many missions flown in the name of peace, THE AIRMAN presents these glimpses of airpower as a positive force in promoting the worthier aspirations of mankind.



Italy, February 1956. The worst winter in a hundred years swept across Europe bringing cold, ice, and snow to sunny southern Italy. Crops were destroyed; towns and villages were isolated by snow; transportation broke down as drifts covered the roads. Operation Snowbound *got under way at 0325 February 13 as a C-119 lifted from the runway at Landstuhl AB, Germany, and turned south through swirling snowflakes for Italy. The plane landed in a howling blizzard at Ciampino Airfield with 11,000 pounds of blankets and food—first of an armada of aircraft which followed to join this articulate expression of the brotherhood of man.*

Painting by Carl Setterberg

LIFELINES in the Sky

Whether in floods in England or Holland, a typhoon in Japan, hurricanes in South America, earthquakes at Agadir, appearance of USAF insignia brings new hope.

Korea, 1950. Hundreds of Korean orphans, the innocent flotsam of war, were flown from danger zone to haven in South Korea.

North Africa, 1952. Thousands of devout Moslem pilgrims enroute to the Holy City of Mecca were stranded at Beirut, Lebanon. In Operation Magic Carpet *USAF airlifted almost 4,000 of the faithful to Jidda, the port of Mecca in Saudi Arabia.* Magic Carpet *enabled the travelers to fulfill the ambition of a lifetime by visiting the birthplace of Mohammed.*

This Chilean youngster, en route to safety via MATS, cautiously approaches the mysteries of a GI C-ration.

High over the Andes, loadmaster checks his gear on flight into Chile. And airborne away from disaster area, an airman checks his precious cargo.

MATS C-124s and C-118s shuttled between Puerto Montt and Santiago, airlifting supplies to the stricken area and ferrying refugees out.

In May and June of 1960 a terrifying series of earthquakes and tidal waves devastated parts of the Republic of Chile on the west coast of South America. Thousands of people were left homeless; water supplies and electricity were disrupted, and surface transportation was crippled.

To help the people of Chile in coping with their multiple tragedies USAF mounted

AMIGOS AIRLIFT,

using transport aircraft stationed in the United States and the Panama Canal Zone. Support personnel worked round the clock at en-route stops, Tocumen, Panama; Lima, Peru; and at Los Cerrillo International Airport at Santiago, Chile, as the airlift reached crescendo.

More than 750 tons of food, clothing, medical supplies, and equipment were airlifted in 68 missions by MATS aircraft. Some 670 military personnel of U. S. forces fanned out into the stricken area to lend a hand where help was needed. The equipment, drawn from military stores in the United States, included two complete field hospitals which will remain in Chile as a gift from the American people.

LETTERS TO THE EDITOR, *continued*

Retired Pay

Sir: In the April issue's You Ask It column, I noted that there is a possibility that retired pay may be denied to some because of a court martial conviction. The answer then added that the "nature of the offense was usually the governing factor." Can you elaborate?

Name Withheld

• *Offenses involving misconduct in connection with official duties may fall in this category. The applicable law, the so-called Hiss Act.*

Sir: I have a hypothetical case of two officers who are about to retire that I would like you to clarify if possible. Assume there are two lieutenant colonels, both completing 20 years active Federal service and both having well over the required ten years of commissioned time. Both were originally in the Reserve and each was on inactive duty for a period of approximately six years. Upon recall, however, one accepted a Regular commission while the other remained as a Reservist. Now, both want to retire. Can you tell me what basis will be used for figuring the retired pay of each of these two individuals?

Capt. G. W. Mode
Plattsburgh AFB, N. Y.

• *According to officials in the Retirement Branch, DCS/Personnel, Hq USAF, both would figure their retirement pay at 65 percent. They base their conclusion on the fact that in the case of voluntary retirement, both are entitled to 2.5 percent for each year of service which may be counted for basic pay. For pay purposes, in your hypothetical case, each is entitled to credit for 26 years.*

★ ★ ★

Suggestion

Sir: I thoroughly agree with the main points of Captain Sturm's June article *Your Personal Flight Plan* and can appreciate the questions unanswered in the Pentagon on this subject since I am a recruiter. Nevertheless, for what it is worth, I would like to add a point. I think the term "navigator" is outmoded and should be dropped in favor of one which more aptly describes the coming need for men who will provide direction to the movement of manned aerospace weapon systems. I think Astro-Guidance Officer or Aerospace Penetration Officer would be more suitable.

TSgt. Vernon Thacker
Huntington, W. Va.

★ ★ ★

Specialized Assignments

Sir: I have a question concerning the possibility of attaining a specialized assignment. I speak Greek fluently and have volunteered for overseas hoping to obtain an assignment in that country. Is this the proper method for obtaining such an assignment?

A2C Thomas Stokes
Lackland AFB, Tex.

• *Such assignments, quite naturally, are difficult to come by. First, of course, is the fact that they are exceedingly limited in number and usually confined to specific career areas and grade structures. In addition, there seems to be no shortage of linguists in the language area to which you have reference. However, despite all these limitations, we suggest you contact your personnel officer for advice as application procedures for special assignments differ from those for regular overseas assignments.*

★ ★ ★

One Small Error

Sir: One thing I have learned after studying the Arctic extensively is that about 90 percent of what Americans believe about this area is false. This showed up in the article *The Air Force's Polar Push* in your May issue. The author cites Greenland as "a country where hardly a living thing grows." In fact, Greenland is well named and in summer has more green areas than all of the British Isles. Aside from this small error, however, the article was tremendous in my estimation.

A2C Paul Stein
Missouri Air National Guard

★ ★ ★

Unauthorized

Sir: In our local personnel section we are often queried concerning the wear of the NATO ribbon. I can find nothing in AFR 900-7 which specifies whether or not this ribbon may be worn.

SSgt. Charles Deits
Lowther AS, Canada

• *Officials in Awards Branch, DCS/Personnel, Hq USAF, indicate that a proposal for the adoption of such a ribbon was made some time ago. However, no official action has ever been taken and its wear is not authorized for USAF personnel.*

★ ★ ★

HOW YOU GET AIRMAN

THE AIRMAN is printed for everyone in the Air Force regardless of grade. It is distributed free to all active Air Force units, Air Reserve Centers, and Air National Guard organizations.

Subscriptions are available to those who desire them. For convenience, a subscription blank is printed below. Make all checks or money orders payable to Treasurer of the United States.

Superintendent of Documents
U. S. Government Printing Office
Washington 25, D. C.

Please send THE AIRMAN for one year to the following address. Enclosed is a check or money order for $3.50.

Name_____

Address_____

City_____ State_____

AIRMAN'S WORLD

PROGRESS IN SPACE EXPLORATION has caused engineers to re-examine the question of radio waves and their effect upon communications. One of the testing facilities which is producing a multitude of new data is this odd-shaped chamber, operated by the Republic Aviation Corp. in their new multi-million dollar R and D facility on Long Island. Object of these tests is to determine the efficiency of various antenna designs under minimum reflection conditions.

BITS OF BLUE

. . . Watch for distribution of a new DOD pamphlet (DOD Pam 6-15) entitled *Your Personal Affairs*. It explains, among other features, the purpose of a will, a power of attorney, and joint bank accounts.

. . . USAF has ordered five Lockheed *Jetstars* for addition to their operational aircraft inventory. The plane has been given a military designation of UCX (utility cargo aircraft), and is capable of speeds up to 550 m.p.h. and altitudes above 45,000 feet. (See cut.)

. . . Scientists at Holloman AFB, N. Mex., recently established a set of records with a single sled run test. In preliminary testing, they fired a 2.5 ton monorail sled at Mach 3.5. Project engineers described it as "never so big a monorail, so heavy, so fast."

. . . USAFA has its first foreign instructor. German Air Force Capt. Horst M. Judel has joined the staff at the Air Academy as an instructor in the German language. He is a recent graduate of the Luke AFB, Ariz., flying training program.

. . . Two WAF officers, Lt. Ardyth Chandler and Lt. Nancy Mumma, recently became the first two women graduates in the eight-year history of ATC's Supervisory School, Randolph AFB, Tex.

. . . Ever wonder what happens to "old" aircraft? President Franklin D. Roosevelt's *Sacred Cow* is among those that are still operational. It is assigned as Aircraft No. 10, VIP flight, Bolling AFB, D. C.

. . . Lockheed officials recently announced that a C-130A *Hercules* had established a new world air-drop record by successfully parachuting more than 17.5 tons of boiler plate from its cargo area. The figure represented nearly a third of the aircraft's gross takeoff weight.

. . . Technicians at Holloman AFB, N. Mex., recently announced successful completion of a new "rapid-fire" multiple launch system. Designed to increase the effectiveness of the TM-76A *Mace*, it allows a four-man crew to fire four missiles in less time than was formerly required to launch one.

SPECIAL PHOTO COURSE

ACT's Lowry AFB, Colo., opens a new "space age" photographic course effective this month.

The Precision Photographic Processing Control Course will cover the handling of high resolution photography such as the film produced by *Midas* satellites. Classes will be limited to six students each and will be approximately 13 weeks long.

The course will include instruction in advanced photographic theory quality control procedures, high acuity laboratory management and supervision, and control and analysis of image quality and resolution.

COVEYS OF QUAIL

Three McDonnell GAM-72 *Quail* missiles were recently released by a SAC B-52 in multiple testing of diversionary tactics which are being adapted to USAF's retaliatory force use.

Designed to be released in coveys should counterattack become necessary, the *Quail* produces a radar blip similar to that of the mother bomber and adds confusion to defensive forces charged with intercepting SAC's weapons.

The success of the tests adds still another facet to SAC's combined missile-bomber force and further increases its deterrent capabilities.

NEW VULCAN CONTRACT LET

General Electric has been awarded a contract for continued production for their 6,000-round-per-minute *Vulcan* 20mm. cannons.

The six-barrel gun — patterned after the famed Civil War Gatling gun—is employed as part of the armament on Republic F-105 *Thunderchiefs*, Lockheed F-104 *Starfighters*, and Convair B-58 *Hustlers*.

GE officials have described the weapon as the "world's fastest firing cannon, capable of firing more shells in 60 seconds than an entire infantry company can shoot in 20 minutes."

POSTHUMOUS AWARD

The nation's highest official recognition for heroism in saving or attempting to save a life at sea, the Gold Life-Saving Medal, was recently awarded to Maj. and Mrs. Robert J. Cahill in recognition of the heroism of their late son.

Last November, Stephen, 19, attempted to rescue his 16-year-old brother after the boat, from which they had been fishing, overturned at the mouth of the treacherous Klamath River. Stephen had managed to swim through 12-foot seas to safety when he discovered his brother still struggling against the surf. Unhesitatingly, he returned to the water to aid the younger boy, but both were swept away by a huge breaker.

The award was authorized by Robert B. Anderson, Secretary of the Treasury, and presented to the proud parents by Capt. Roger Johnson, Chief of Search and Rescue for the 12th Coast Guard District.

Major Cahill is commander of the 777th Aircraft Control and Warning Sq., Klamath AFS, Calif.

U. S. Coast Guard photo

GLUE REPAIR PROCESS

Technicians in the 6515th Field Maintenance Squadron here glued a supersonic B-58 *Hustler* bomber back together.

Sounds strange, but it was precisely the method used to repair one of the sleek Corvair jets that recently blew seven tires on takeoff, sending flak-like debris through the right wing and its surfaces.

The procedures for the unusual repairs were developed by the Convair company.

All the more astounding is the fact that the finished job had to flow into the overall aerodynamic smoothness of the airplane whose exterior surfaces are about as slick as a highly polished mirror.

Besides damage to the landing gear and a punctured hydraulic system, the Maintenance Group had a total of 65 holes, punched into the wing, to contend with. This is the first time any major structural repairs had been attempted on the delicate honey-combed wing panels of the B-58.

The glued-on patches used were fiberglas, treated with a rosin for hardening, and a catalyst which sets up a heat reaction to quicken the drying and hardening.

The damaged areas were first milled out, removing the old honey comb slabs, and the new area was then built up solid with fiberglas. There can be no air voids in the repaired holes, and a powerful vacuum was attached to the area to withdraw even the most minute bubble of air.

The finished patch was then milled flush with the rest of the wing with a milling machine that turns at an incredible 50,000 revolutions per minute. A final inspection was given, using an oscilloscope whose vibration frequencies measure wave lengths; the resulting picture on a cathode tube tells if any weaknesses exist in the repaired areas. According to Mr. Clyde Dower, foreman of the Field Maintenance Aircraft Structural Repair and Sheet Metal Unit, the repairs are "stronger than the original structure."

Most of the fiberglas repairs were accomplished by Ernest Deer and Dayton Simpson. Their finished product can stand skin temperatures of 300 degrees generated by air friction as the double-sonic bomber flashes through the atmosphere.

Desert Wings, Edwards AFB, Calif.

NEW LUBRICANT DEVELOPED

ARDC officials have announced the development of a new solid film lubricant capable of withstanding temperatures in the 1,000-degree (F.) range.

Given a usable wear-life of approximately three times greater duration than the next available film, the lubricant may be applied to bearings which involve slow sliding, heavy loads, and high temperatures. The addition of lead sulfide as the lubricant pigment and boric acid as the adhesive element was the basis for this significant development.

RECORD CENTER TRANSFERRED

General Services Administration has accepted responsibility for the operation of the Air Force Record Center which will continue to operate from its present location at 9700 Page Boulevard, St. Louis, Mo.

The Center's responsibility for storing and servicing personnel records for separated Air Force military personnel and for most organizational records of major USAF commands and subordinate activities will also remain unchanged.

"Now do you know why this is a restricted area?"

HUMAN ERROR THWARTS MISSILES

Officials at Wright Air Development Division, Wright-Patterson AFB, Ohio, report that a recently completed survey indicates human error has been adding a 20-53 percent unreliability factor to USAF missile systems.

The study, which compiled data from more than 4,000 malfunction reports, shows that the frequency of unscheduled holds and equipment failures of nine USAF missile systems was boosted by this significant degree due to "human-initiated" malfunctions.

As a result, steps are being taken to perfect a systematic approach for testing of human performance factors prior to such assignments. Aim? Reduction in the number of man-induced missile systems failures.

PIPELINE SAVINGS UP

Commercial pipeline fuel services to 21 high-consumption bases have now been completed at no cost to the government through the installation of feeder lines off regular commercial facilities.

As a result, significant annual transportation savings have been effected and additional bases are being studied for possible adaptation to this type of fuel supply system.

Currently, feeder lines similar to those presently in use are being laid into McGuire AFB, N. J., and proposed lines into Mountain Home AFB, Idaho, and Walker AFB, N. Mex., have been approved. When these become operational, estimates place annual transportation savings near the $4 million mark. Additionally, USAF will benefit by the use of nearly two million barrels of commercial storage facilities on a cost-free basis.

ABSORBER TESTING COMPLETED

Final reports on joint Air Force-Navy deadload testing of Bliss arresting equipment for aircraft indicate that its success has placed it in the category of "tentative standard equipment" for the near future.

The single-engine rotary friction brake energy absorber successfully halted—in less than 1,000 feet—loads up to 25,000 pounds at speeds as high as 187 knots. Loads as high as 40,000 pounds at speeds up to 157 knots were halted in the same distance. Arrestments proved to be smooth for both center and off-center loads indicating that the new type gear is the most efficient presently available.

NO MILK IN THE MILKY WAY?

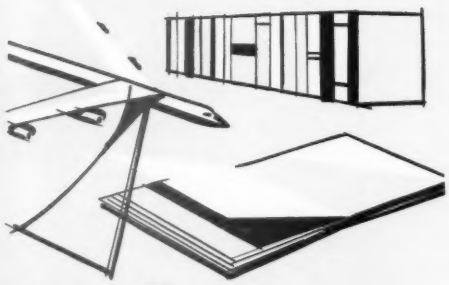
Space Age developments may be encouraging small fry scholars to take a more lively interest in their arithmetic. Consider the case of the sixth-grade boy in an English school who undertook to work out specifications for an interplanetary mission. Since adequate provisions would be essential, of course, he gave priority to calculating his requirements. The answer: "584 ham sandwiches, 764 cokes and 407 cakes and pies." Evidently the lad has his misgivings about an all-algae diet.

SPACE CONFERENCE TO CONVENE

Several government agencies and private technical societies will pool their efforts later this month in a four-day national Space Power Systems Conference in Santa Monica, Calif. Host unit will be the American Rocket Society.

The agenda will include sessions devoted to nearly every phase of the present and predicted state-of-the-art in basic and applied research, component fabrication, system design and development as applied to power systems for orbital and space craft, and allied subjects. Speakers will slant their discussions toward military, civilian, and political applications and aspects.

Representatives of each of the military services, the National Aeronautics and Space Administration, Atomic Energy Commission, Advanced Research Projects Agency, and other technical societies are expected to attend the meetings which will begin September 27.



Air Age Library

Periodically, in answer to reader requests, we list the latest in paperbacks on aviation and related subjects.

Falcons of France, Charles Nordoff and James Norman Hall, Monarch Books.

Rockets Through Space, Lester Del Ray, Premier.

Islands in the Sky, Arthur C. Clarke, New American Library.

Alas, Babylon, Pat Frank, Bantam.

Of Stars and Men, Harlow Shapely, Pocket Books.

Runway Zero Eight, A. Hailey, Bantam.

Flying Tiger: Chennault of China, Brig. Gen. Robert L. Scott, Jr., (USAF, Ret.), Berkley.

What We Must Know About Communism, Harry and Bonaro Overstreet, Pocket Books.

Rocket Manual for Amateurs, Capt. Bertrand R. Brinley, USA, Ballantine.

Man Into Space, Lloyd Mallan, Fawcett.

The Night Hamburg Died, Martin Caidin, Ballantine.

D-Day, David Howarth, Pyramid.

The Nine Days of Dunkirk, David Divine, Ballantine.

The Inhabited Universe, Kenneth W. Gatland, Premier.

Strategy for Survival, Wayland Hilton, Penguin.

X-15: Man's First Flight Into Space, Martin Caidin, Rutledge.

Flight Nurse, Adelaide Humphries, Berkley.

Stars in the Making, Cecilia-Payne-Gaposchkin, Pocket Books.

The Star of Life, Edmond Hamilton, Crest.

The Enemy Stars, Poul Anderson, Berkley.

Flight, Edgar Jean Bracco, Berkley.

The Oscillating Universe, Ernest J. Opik, New American Library.

Fighting Generals, edited by Phil Hirsch, Pyramid.

The Blockhouse, Jean-Paul Clebert, Avon.

The Life of a Burma Surgeon, Dr. Gordon S. Seagrave, Ballantine.

Stalingrad: The Battle That Changed the World, Heinz Schroter, Ballantine.

In Flanders Fields: The 1917 Campaign, Leon Wolff, Ballantine.

You Ask It

Would you please define proficiency pay?

This is the extra money which is paid to personnel doing certain jobs which are considered critically important to Air Force missions.

What is the basic reasoning behind pro pay?

Primarily, it was adopted as a means of retaining trained enlisted personnel in critical skill areas. Additionally, it is aimed at providing an incentive for higher levels of performance; as a compensation to assist in meeting the higher basic wages of industry; and to provide added reasons for airmen to convert from noncritical to critical skill career areas.

What is the method used as the basis for selection of those who will receive pro pay?

In reality, the law of supply and demand governs. Some of the additional factors include aptitude, training time and costs, retention rates, and such other occupational requirements as job knowledge, adaptability, resourcefulness, and mental effort.

Will all present pro pay skills remain permanently on the list?

No. As the critical degree of any occupational skill tends to decline, so too will the chances of personnel in that skill area continuing to receive pro pay. Again, supply and demand will govern—where the supply is short, pro pay will be used as an added lever to entice men to retrain into this area.

Have any ceilings been established to govern this use?

Yes. There is a limitation of 15 percent of the enlisted force who may be on the rolls at any one time. Additionally, at present only the first two levels have been authorized for payment. P-3 is also included in the law and may be utilized if such action is justified as a means of retaining personnel in critical fields.

In the Name of Congress

NO. 24 IN A SERIES

DEATH

BY THE opening days of August 1944, Allied troops were beginning the drive which would eventually carry them deep into Hitler's Reich to end the bloodiest war in world history.

Throughout western France, ground troops were poised for, or already moving on, the initial stages of the final dash which would spell doom for the Axis.

Implicit in their battle plans was airpower, and American fliers were anxious to prove that close air support and aerial superiority were vital factors in the conduct of this new-type war.

Consequently, the air arm was among the busiest of the Allied weapons—smashing at the defenders, sniping at would-be reinforcements, denying supplies to the enemy's front-line troops, and generally creating confusion and spreading panic ahead of the advancing Allied armies.

Among the air veterans who participated almost daily in such strikes was Capt. Darrell R. Lindsey, a native of Jefferson, Iowa, who had long since gained the mantle of combat veteran.

In January 1942, the 22-year-old Lindsey had enlisted in the Aviation Cadet program and, after the normal complement of flying schools, had graduated from pilot training in August as a second lieutenant.

Bombardier training followed and, in January 1943, he was assigned to the 21st Bombardment Group where, in recognition of his natural leadership, he rapidly rose to the position of assistant flight commander.

In September, Lieutenant Lindsey was transferred to the 585th Bombardment Squadron, 394th Bomb Group, where he assumed the duties of flight commander. The following February, the group was posted to duty in England.

In mid-July 1944, the initial phase of the invasion of Europe had ended.

Breakout, the all-important second phase, was now the primary objective.

HAT PONTOISE

by SMSgt Hal Bamford

Martin B-26 Marauders *move inland over Europe to strike enemy targets. Note the invasion markings which have been painted over.*

Captain Darrell R. Lindsey

On March 23, 1944, Lindsey and his crew received their first taste of combat, leaping the Channel to strike against the enemy from Martin B-26 *Marauders.*

In the brief months that followed, the 585th flew a major share of the medium-bomb strikes against the enemy-held fortifications prior to D-Day. The experience they gained in pre-invasion battles proved extremely useful in missions flown in support of the invasion itself. In turn, success here marked them for increased activity in post-invasion days.

So active were they that by the morning of August 9, 1944, Captain Lindsey and his crew were scheduled to fly their 46th combat mission. In short, in less than 140 days, the Lindsey crew had compiled a total of 45 missions, an average of one approximately every three days.

The assigned target for the August 9 raid was the L'Isle Adam railroad bridge, close by the town of Pontoise, France, about 20 miles northwest of Paris. Here, near the confluence of the Seine and Oise Rivers, the Germans had concentrated vast mountains of supplies, earmarked for their already embattled front-line troops. Additionally, the bridge could provide an escape valve to the east in the event the Allied drive forced the Germans into retreat—an eventuality that now seemed highly probable.

The mission of the airmen was to deny these supplies to the forces opposing the forward thrust of the Allied ground forces and, at the same time, to cut off any effort toward flight to the *Vaterland.*

The day was to be marked by nearly 800 sorties to several different fighting sectors, but the mission of the 585th was among the key strikes planned. The *Marauders* were airborne early in the day in excellent flying weather and moved immediately on the target without benefit of a diversionary feint.

The citation, published on May 30, 1945, which awarded Captain Lindsey's Medal of Honor, graphically tells the story of the group leader's heroism on his final mission.

On 9 August 1944, Captain Lindsey led a formation of 30 B-26 medium bombers in a hazardous mission to destroy the strategic enemy-held L'Isle Adam railroad bridge over the Seine in occupied France. With most of the bridges over the Seine destroyed, the heavily fortified L'Isle Adam bridge was of inestimable value to the enemy in moving troops, supplies, and equipment to Paris. Captain Lindsey was fully aware of the fierce resistance that would be encountered. Shortly after reaching enemy territory the formation was buffeted with heavy and accurate antiaircraft fire. By skillful evasive action, Captain Lindsey was able to elude much of the enemy flak, but just before entering the bomb run, his B-26 was peppered with holes. During the bomb run the enemy fire was even more intense, and Captain Lindsey's right engine received a direct hit and burst into flame. Despite the fact that his ship was hurled out of formation by the violence of the concus-

sion, Captain Lindsey brilliantly maneuvered back into the lead position without disrupting the flight. Fully aware that the gasoline tank might explode at any moment, Captain Lindsey gallantly elected to continue the perilous bombing run. With fire streaming from his right engine and his right wing half enveloped in flames, he led his formation over the target upon which the bombs were dropped with telling effect. Immediately after the objective was attacked, Captain Lindsey gave the order for the crew to parachute from the doomed aircraft. With magnificent coolness and superb pilotage, and without regard for his own life, he held the swiftly descending airplane in a steady glide until the members of the crew could jump to safety. With the right wing completely enveloped in flames and an explosion of the gasoline tank imminent, Captain Lindsey remained unperturbed. The last man to leave the stricken plane was the bombardier, who offered to lower the wheels so that Captain Lindsey might escape from the nose. Realizing that this might throw the plane into an uncontrollable spin and jeopardize the bombardier's chances to escape, Captain Lindsey refused the offer. Immediately after the bombardier had bailed out, and before Captain Lindsey was able to follow, the right gasoline tank exploded. The aircraft, sheathed in fire, went into a steep dive and was seen to explode as it crashed. All who are living today from this plane owe their lives to the fact that Captain Lindsey remained cool and showed supreme courage in this emergency.

This award of the Medal of Honor marked the 33rd for a member of the Air Force, the 28th of World War II. Additionally, it was the first awarded for an air action in direct support of post-invasion operations in France. In his honor, Lindsey AB, home of USAFE headquarters, Wiesbaden, Germany, bears this hero's name.

Lindsey's heroic sacrifice of life was not in vain for destruction of the target seriously impeded German supply operations and impaired opportunity for escape.

From this point forward, increasing control of the air over Europe was destined to spell doom for the Axis and make the final months of the war a living hell for the German forces. The willingness, ability, and bravery of men like Capt. Darrell R. Lindsey provided Allied troops with one of the most potent weapons ever utilized by an army in the field. This overwhelming superiority, as much as any other single factor, proved to be the key to victory in Europe.

Blame it on CHAOS

All in the family. If you have trouble remembering all the major planets, it may help to know that the ancient deities whose names they bear were all related in mythology. The Titans, also known as the Elder Gods, are supposed to have been the first responsible creatures on the general scene and the most important character in their outfit was Saturn, whose children included Jupiter, Neptune, and Pluto. For some reason, Jupiter disliked the idea of having his old man as top banana and proceeded to dethrone him. Then he put the universe up for grabs and Neptune drew the seas, Pluto fell heir to the underworld and Jupiter emerged as the supreme ruler. Somewhere along the line Jupiter married his sister, Juno, who presented him with Mars. By another wife, Jupiter sired Venus. In the script of mythology, the old gods did not create the universe; it was the other way round—the universe created the gods. At the real beginning of everything a formless confusion existed, personalized by the name, Chaos. In a unique performance on which details are lacking, Chaos gave birth to Night and also to Erebus, the bottomless abyss leading to Hades, dwelling place of Death. Thanks to the union between Night and Death, Day was born. Meanwhile, Chaos returned to her solo experiments in maternity and brought forth Gaea, as the Greeks called the Earth, and reminders of that original name are still with us in such compounds as geology, apogee, etc. No question at all that Gaea took after her mother; utilizing the mysterious do-it-yourself method, she presented herself with a male child whom she named Uranus, or Heaven. When Uranus grew up, he made Gaea his bride and they set about raising a family. Here something went haywire with the magic formula for a while, for all Gaea birthed at first was a succession of monsters, gigantic creatures of enormous power who supposedly have since tormented humanity by producing earthquakes, destructive storms and other physical evils. Undismayed, Gaea and Uranus—Mother Earth and Father Heaven—persevered and in due time were rewarded with the brood of Titans, which is where we came in at the beginning.

So, if the world seems to be going from bad to worse or vice versa, be philosophic. You can't expect rational behavior from this Child of Chaos.

—W. A. KINNEY

Anyone who wants to write a book on how airmen spend off-duty hours should check with PACAF's libraries.

SEARCH FOR KNOWLEDGE

by Mary Carter, *PACAF Command Librarian*

CURIOSITY may have killed the proverbial cat, but within the Pacific Air Forces, curiosity is leading the airman and his family in a quest for knowledge, culture, and recreation. Their reading interests, as determined through the use of the base library systems in the Pacific theater, prove that the airman compares favorably with the most intelligent and informed groups of United States citizens.

Throughout the Pacific Air Forces—which encompasses the Hawaiian, Philippine, Ryukus, and Japanese Islands, as well as Taiwan and Korea—assigned personnel borrowed in excess of 1,400,000 bound books during 1959. Even at an average of five reading hours per book borrowed, the number of leisure hours spent in constructive reading and study multiplies to astronomical figures.

The library materials are housed in and circulated from 17 library systems, with a total of 469 outlets. These range from main library buildings, with collections of 30 to 40 thousand volumes, or highly specialized collections in the Commander's Staff Judge Advocate's, or Intelligence s offices, to a field library of 500 titles on make-shift shelves in a quonset hut located at a site on top of some mountain. More than 400,000 bound books, 12,000 recordings, and 12,000 subscriptions to periodicals are welded into one gigantic library system. A man on an isolated site such as Iwo Jima, Chinchon-Ni off Korea, or Wakkanai in Hokkaido, Japan, as well as the commanding general in the Hale Makai building at Hickam AFB in Honolulu, may have any publication or recording he needs. This material is often used to accomplish his job, in pursuit of professional proficiency, to supplement an education course, learn a foreign language, know more about local customs, world events or foreign policy, build a better hi-fi set or while away some leisure hours.

Good Reading Habits

What kind of books do these men and their families read when they find themselves across the Pacific *far* from the usual public and reference libraries? Air Force personnel represent an average cross section of the

Children of Air Force families stationed overseas generate a thirst for knowledge at an early age.

United States population and yet, in most cases, the caliber of reading is superior to that of typical public library borrowers. True, the best sellers, as listed in the *New York Times,* are those publications which make up the reserve lists at the majority of base libraries. On the other hand, the list of PACAF perennial best sellers includes titles by Dickens, Thackery, Plato, Hemingway, Faulkner, T. S. Eliot, Shaw, Untermyer, and Ibsen. Such titles as Beard's *Rise of American Civilization;* Durant's *Story of Civilization;* Gunther's *Inside Russia Today;* Cooke's *There is No Asia;* Djilas' *The New Class;* Hoover's *Masters of Deceit;* Hunter's *Brainwashing;* all have a continuing interest for the airman who is trying to understand the opposite ideology. Books on locale are always at the top of the list, and the number one title will include: Benedict's *Chrysanthemum and the Sword,* or Osgood's *Koreans and Their Culture,* or Keith's *Bare Feet in the Palace,* depending on the assignment of the airman. Popularity of the language books is not confined in subject to the area of assignment, for Russian, German, French, and Spanish are as popular as Japanese and Korean. Not only are grammars and "how to learn in ten easy lessons" in demand, but fiction, travel and history, written in the foreign tongues, are on the reserve lists. The need for basic refresher courses is reflected in the circulation of Copeland's *High School Subjects Self-Taught,* Hooper's *Mathematics Refresher,* Hellman's *Elements of Radio.* Books on art, music, biography, and travel show hard wear and prove that men are using free time to broaden their cultural horizons. Demand for books on history, from ancient wars through World War II, to all books on current events, reflects the airman's concern for the world about him.

Dependents, Too

The Air Force child is also an active member of this reading group. Over 28,000 juvenile volumes are available in the base libraries to supplement the school libraries. The junior and high school student is found in the base libraries in increasing numbers as in public libraries all over the United States, doing research work or studying for his next day's assignment. Story hours and summer reading programs draw the young fry into the cultural group as they read Japanese fairy tales, *Mary Poppins,* or study the *World Book.* Boy and Girl Scouts volunteer their services to help lighten the load of the library staff in much the same way as they do in many libraries Stateside.

The majority of the libraries, from the large through the medium sized, and even some of the smallest and most isolated, are equipped with listening rooms for recordings which are ever in demand: the classical, semi-classical, the dramatic reading, speech instruction, foreign languages, or the reading of poetry. These recordings are enjoyed within the library itself or are circulated for home and billet use. Other audio-visual materials are in the process of being added in these overseas libraries in the Pacific. Microfilm readers are now at five key libraries and will soon be in the majority of the large libraries. Film editions of back issues of periodicals will be in stock in regional reference libraries or may be borrowed from such reference centers as the Air University.

Hip-Pocket Reading

The bound book and the recording are only part of the vast library circulation system. In 1959, the circu-

lation of paperbound books, magazines, and newspapers totaled over 2½ million items from the library outlets to individual airmen throughout the vast Pacific area. The magazine and newspaper, technical, informational, and recreational journals are eagerly awaited and read by the professional officer as well as the airman basic whether assigned to the "Paradise of the Pacific" in Hawaii or on Ie Shima off the island of Okinawa. The paperbound book, which won its acceptance in World War II, still fits readily into the hip pocket of the man on the alert pad, or on mobility operations in the Philippines, Taiwan, or Korea. It is still easily read by the man in the hospital too tired or ill to hold a bound book, or by the man in transit, on planes, or just waiting in line. Estimate that each paperbound book or periodical issue is read by at least five men during the life of the publication, and one has a general idea of how some of the non-duty hours are spent by Air Force people.

Air Force library service in the Pacific, as elsewhere, offers more than a mere circulation system which insures that the airman and his family may borrow publications and recordings and have a wide range of paperbound books and periodicals available. A readers' advisory and reference service is also furnished him. This service radiates from 17 main libraries and service centers supervised and directed by 27 professional librarians. Dependent wives, airmen off duty, and local nationals—Japanese, Korean, Okinawan, Filipino, and Chinese—all assist the librarians in keeping libraries open seven days a week, an average of 10 hours a day.

During 1959 more than 42,000 reference questions were asked and answered within the Pacific Air Forces Library System. This number is over and above those questions readily answered from charging desks or card catalogs. The run-down of some of the questions such as: "By what authority does the flag fly over Iwo Jima 24 hours a day?" "Height of Tokyo Television Tower as Compared to the Empire State Building;" "What was the relationship between the Dowager Empress Tz'u Hsi of China and Henry Pu-Yi, Emperor of Manchuria?" read like a quiz program.

The question, "What is the detailed explanation and background of the 'White Charger Bill'?" or "Where can one get a copy of 'Ruble Diplomacy'?" sends the librarian searching through reference material, collaborating with colleagues, and utilizing the information and training from college and post-graduate days to find the material which will satisfy the insatiable curiosity of airmen. Such questions are given serious attention for the answer is important to some phase of the Air Force program or to some individual airman who has a desire to know.

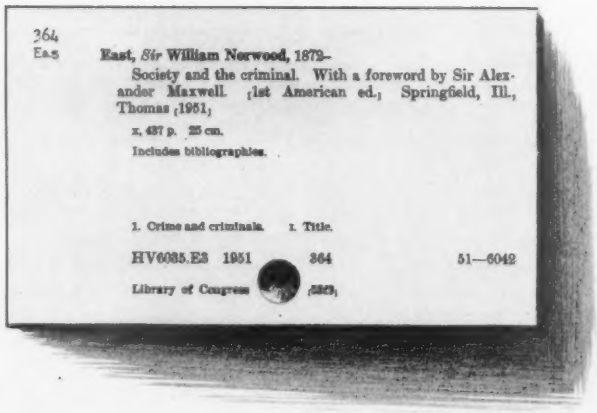
In order to keep ahead of individual and collective airmen demands for knowledge and information, and to provide publications and recordings, as well as answers to the legion of questions, Pacific libraries are stocked with the best and most current technical, reference, and basic materials in all subject fields. Further, many popular titles are procured on a prepublication ordering plan.

Librarians compile bibliographies on such varied subjects as the exploration of space, electronic communications, to the basic religious books. Rare and expensive reference material, microfilm editions, and foreign language books are stocked in the Service Centers to be used by all libraries. Resources of the libraries and service centers are pooled through union listings for maximum use and minimum duplication. An extensive interlibrary loan system is in effect among libraries, military and civilian, in the Pacific, and in the United States proper.

The expenditure for this huge library operation to the taxpayer? Total cost per military man (with his family) is approximately five cents per day. Salaries of professional librarians, cost of the majority of technical, reference, and basic materials, and major maintenance and up-keep of buildings, are paid from the funds appropriated by Congress. More than 50 percent of the total library support monies expended within the Pacific Air Forces is derived from welfare funds. This money is generated by the sales in the base exchanges and from the tickets at the base theaters.

The outlay of the taxpayer's money, supplemented generously by a share in the profits from the BXs and theaters, has supported a vital, aggressive professional library service. Approximately 87 percent of the military and civilian personnel participate as active borrowers. These men, who with their families make up the reading public of the Pacific Air Forces Library System, are duplicated many times within the military forces of the United States. They comprise groups of informed citizens who must be counted in any tally of the nations valuable resources.

Volumes in Air Force libraries are cross-indexed so that the proper book can be located either by checking the subject under study or author's name.


364
Eas
East, Sir William Norwood, 1872-
Society and the criminal. With a foreword by Sir Alexander Maxwell. [1st American ed.] Springfield, Ill., Thomas [1951]
x, 437 p. 25 cm.
Includes bibliographies.
1. Crime and criminals. I. Title.
HV6035.E3 1951 364 51—6042
Library of Congress [583]

It takes two to tango and three is a crowd, but football fans are not complaining about this

COMPLETED TRIANGLE

by SMSgt. Hal Bamford

FOR YEARS the United States Military and Naval Academies have been quietly belting each other's brains out on the football field to the complete exclusion of other service teams. Last fall, all that began to change.

On October 31, 1959, the little kid from down the block, in the person of the Air Force Academy Falcons, took a hand in this annual battle by holding Army to a 13-13 standoff.

Encouraged by his success with one of the big boys, the former poor little kid is scheduled to take on the second member of this exclusive fraternity this fall.

Regardless of the outcome, and although the Black Knights and the Middies won't meet the youngster again for a couple of years, it begins to look quite definitely as if the former two-sided service grid series has now become a full-blown triangle.

Scheduled to meet Navy on October 15 in Baltimore's Municipal Stadium, the USAFA Falcons will be minus some of their stars of last year, but enough talent is back and the addition of several likely looking newcomers has given added assurance that the silver and blue will leave a pleasing impression in their initial naval engagement.

USAFA's headman, Coach Ben Martin, believes that "overall, the 1960 squad appears to be about the same in ability as the edition of a year ago." However, additional experience in some positions should give the squad more scoring punch, and if the defense jells—"and the staff was encouraged by the progress in spring practice"—the Falcons could be much stronger than their 5-4-1 record of 1959.

A year ago, tackle and center, because of graduation losses, were the weak spots in the line. Today, that apparent weakness has shifted to the guard slot.

The fact that Mike Rawlins has returned to the backfield after a stint at center in '59, speaks well for strength regained at the pivot. Charles Moores, a letter

winner a year ago, returns to anchor the critical center post, but he may well be shoved back by a pair of eager juniors, E. C. Newman and Ken Needham.

Although graduation losses last year totaled only eight, exactly half of these were guards. As a result, of the top six present guards, only Randy Cubero and John Moore have lettered in past campaigns. Despite this lack of experience, Terry Griffey, a junior, came along fast enough in the spring to indicate he may well grab a starting job, and sophomore Stuart Fenske has also projected himself into the battle. Others who figure to fight for jobs vacated by such keymen as Howard Bronson and Dan Johnson are Frank Kiszely and Dick Shoof.

Tackle, the big question a year ago, is knee-deep in solid veterans now. Tom Walker, a senior, and Pete Bobko, a junior, have both lettered and seem assured of starting jobs. They are backed by another letterman pair in Neal Rountree and Bob Wagner.

Even more important, especially in future planning, are a brace of outstanding sophomores, Jim Lang and Bruce Kohl. Both were ends on the '59 freshman squad, both have shifted to tackle for their varsity assignments, and both seem destined to play key roles with the current Falcon entry—an eventuality which would make any coach beam.

The fact that both freshman ends have shifted position speaks volumes about the flanker spot on the varsity. Tops, of course, are the veterans Bob Brickey and Sam Hardage, both rated as all-sectional calibre by most writers in the Rocky Mountain area. Close behind them come Vic Maxwell and Bob Best who, in turn, are backed by another pair of glowing sophomore prospects, Richard Brown and Danny Eckles.

This solid experience up front, plus the eagerness of some of the youngsters, could well provide the brilliant quarterback, Rich Mayo, with the finest protection he has enjoyed since donning the silver and blue.

Mayo's record speaks for itself. In two previous campaigns he has completed 208 passes in 385 tries with only 16 interceptions. His 54 percent completion average for two years in a row has placed him high among the nation's best, and his tosses have led to 17 touchdowns. Rich may well become the Academy's second All-American, succeeding Brock Strom, the 1958 winner of that coveted honor.

However, Coach Martin faces a problem in backing Mayo in the driver's seat for the redoubtable John Kuenzel is gone. In his place, two untried youngsters will battle for the relief role—junior Bob McNaughton and sophomore Dean Hess.

At the halfback slots, experience once again is a major asset. Mike Quinlan, the team's leading scorer and ground gainer in both '58 and '59, is back for his final fling along with letterman Don Baucom. Backing these two are the equally experienced Phil Lane and the aforementioned Rawlins, who has returned to backfield chores after a season at center.

At fullback, another veteran performer, jarring Monte Moorberg, is back for his last year. Again, as is the case in so many positions this season, he is being hard-pressed and either senior Chris Dixon or sophomore Robert Shaw could well step into his shoes as starter before the season is many weeks old.

Actually, the Falcons will not have quite as long to prepare for their climactic struggle with Navy as they did for the service academy curtain raiser with Army a year ago. After Colorado State, the last Saturday of this month, they will meet Stanford and Missouri in two tough battles, then travel to Baltimore for the key clash. Additionally, the calibre of the early opposition is going to figure prominently in the team's preparation, with Missouri probably providing the vital test.

Last year, the Falcons caught Missouri the week following Army and the inevitable letdown cost them a 13-0 defeat and tumbled them into a shaky finish which saw them lose two of their last three starts. Missouri could provide a similar pivot again. If the cadets are too intent upon revenge, they could leave their Navy game in Denver. If they're concentrating too emphatically on looking past Missouri, they could take a costly

1960 FALCON SCHEDULE

DATE	'59 SCORE	OPPONENT
Sept. 24		Colorado State at Denver
Oct. 1		Stanford at Denver
Oct. 8	0-13	Missouri at Denver
Oct. 15		Navy at Baltimore
Oct. 22	20- 7	Wyoming at Laramie
Oct. 29		George Washington at Denver
Nov. 5		Denver at Denver
Nov. 12	20- 7	U.C.L.A. at Los Angeles
Nov. 25	7-15	Colorado at Boulder
Dec. 2		Miami at Miami, Fla.

walloping from that Big Eight powerhouse.

Once past the first four, however, things may ease up somewhat. After Navy come Wyoming, to whom the cadets have never lost, and George Washington, a squad which spoiled the Falcons' eastern debut in 1957 in the Nation's capital but which hardly figures to be in the Academy's class this year.

The final four games list Denver; U.C.L.A., always a toughie; equally strong Colorado; and the season finale against Miami of Florida, the only team other than Navy on the '60 slate which the Academy has not met before.

Quite obviously, there is no true "breather" anywhere along the line, but Ben Martin has proven before that this is the way he likes it. In two years, the youthful mentor has guided his charges through 14 wins and three ties while losing only four.

As noted earlier, spring practice provided a good many partial answers to the major replacement problems facing the coaching staff. Martin's magic touch and sound football knowledge will do as much to solve the remaining problems as anything else.

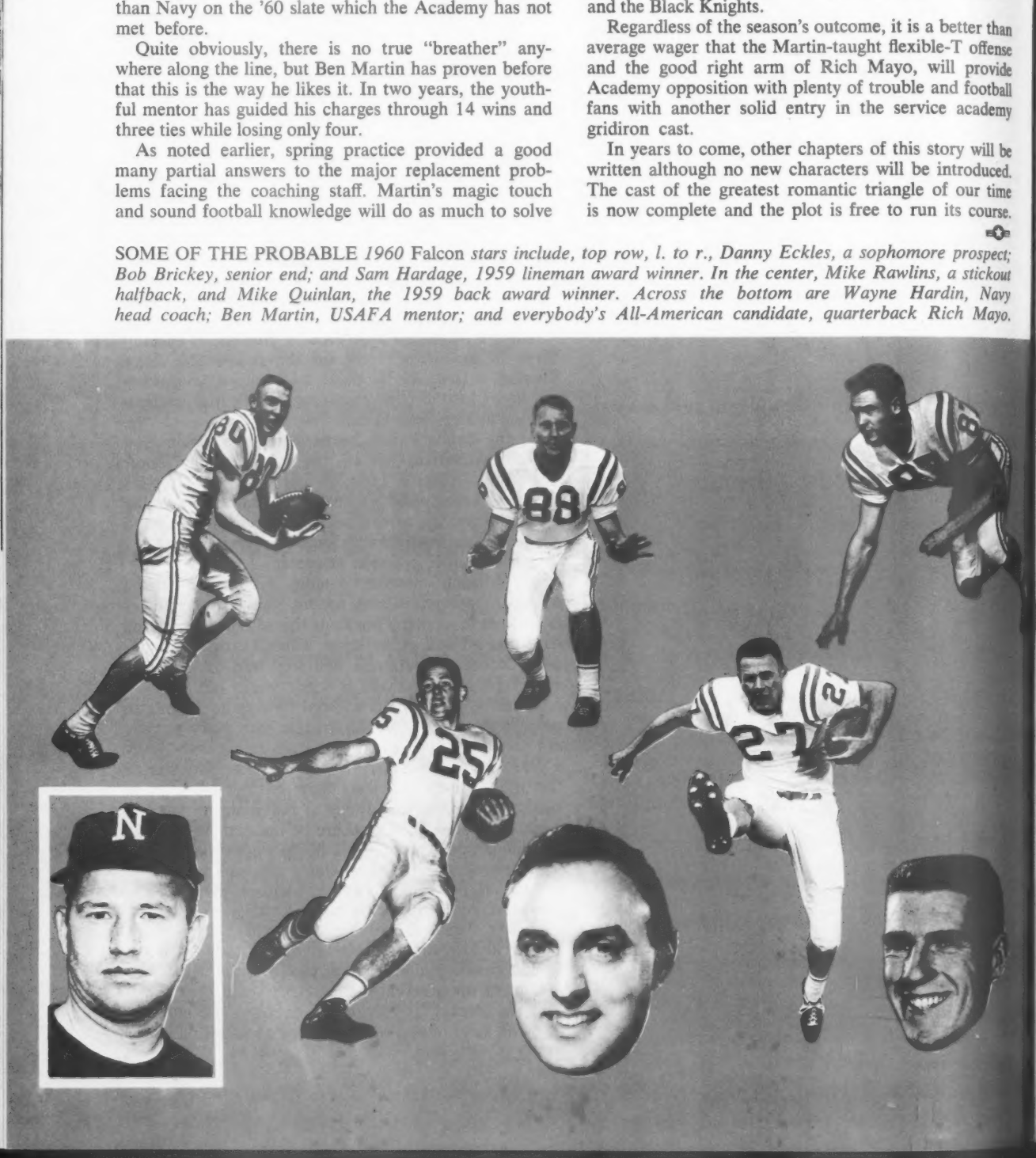
As a graduate of the Naval Academy, you can bet he probably wants that ball game as much as any on the schedule although he'll guard against the squad pointing for that one alone.

Wayne Hardin, the Navy coach, will be equally anxious to beat the successful Martin, a trick Army couldn't turn, and he'll have the brilliant Joe Bellino to ease his task. However, Hardin also faces the job of asking his squad for its best against both the Falcons and the Black Knights.

Regardless of the season's outcome, it is a better than average wager that the Martin-taught flexible-T offense and the good right arm of Rich Mayo, will provide Academy opposition with plenty of trouble and football fans with another solid entry in the service academy gridiron cast.

In years to come, other chapters of this story will be written although no new characters will be introduced. The cast of the greatest romantic triangle of our time is now complete and the plot is free to run its course.

SOME OF THE PROBABLE *1960* Falcon *stars include, top row, l. to r., Danny Eckles, a sophomore prospect; Bob Brickey, senior end; and Sam Hardage, 1959 lineman award winner. In the center, Mike Rawlins, a stickout halfback, and Mike Quinlan, the 1959 back award winner. Across the bottom are Wayne Hardin, Navy head coach; Ben Martin, USAFA mentor; and everybody's All-American candidate, quarterback Rich Mayo.*



You should know

ARE YOU NEARING RETIREMENT?

Teacher training programs offered at Purdue University, Duke University, and the University of California have met with such success in training retired military personnel for a second career in education that many other colleges and universities have adopted similar programs.

These programs are offered to persons holding a bachelor's degree or better and who also meet standard requirements for graduate level study. In about 15 months of study they present a basic review of the subject to be taught and qualify the student with a teaching credential required by public schools and preferred by many other private secondary, junior and senior schools. At the completion of the training period a master's degree may be achieved. To date all persons completing the training have secured appropriate appointments.

Information and fact sheets may be obtained from:

Dr. Aubrey H. Smith
Retired Armed Services Training Program
Department of Mathematics and Statistics
Purdue University
Lafayette, Indiana

STUMBLING STUDENTS

With high schools reopening all across the country, parents once again are exchanging thoughts on the progress of their offspring along the rocky road of education. For some there are problems, particularly for parents of children in the upper intelligence levels whose performance does not reflect their full capability.

Educators call these students who fail to meet their scholastic potential "under-achievers." They are easily identified by comparing the IQ (normal IQ is 100) with their achievement test scores. A difference of 30 points indicates that the pupil needs help, and this involves a lot more than simply telling him that he must buckle down.

The National Education Association estimates that there are more than 400,000 under-achievers among the nation's 11.3 million high school students, and the number is growing daily. NEA and other agencies are investigating ways of providing better counseling for students, but some psychologists proclaim that the atmosphere prevailing in the family circle is the most important factor affecting school work.

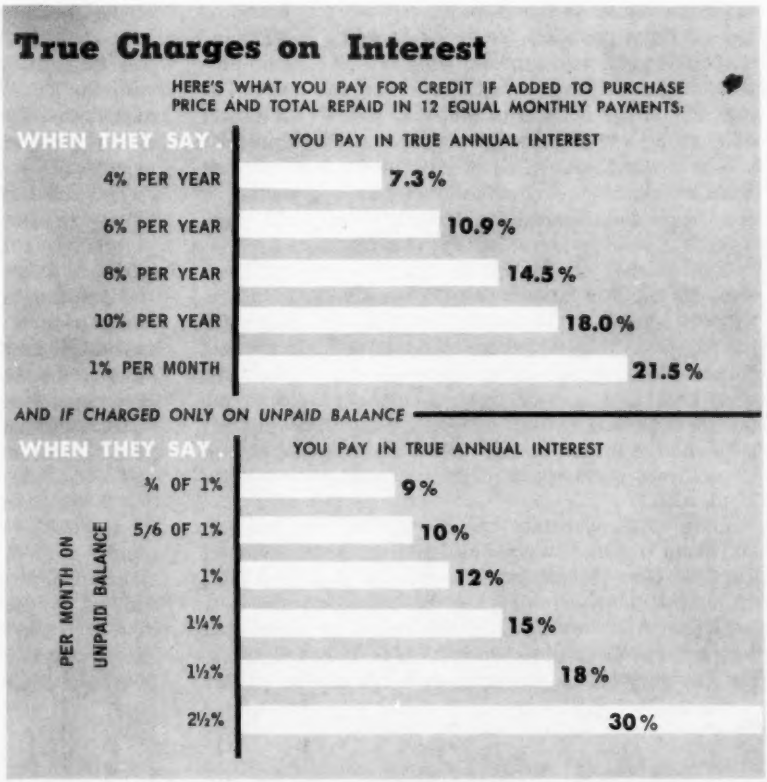
Today the teenager's distractions are a hundred times greater than those of his father a generation ago. Life moves at a crowded accelerated pace, and it is no wonder that school work falls off. The adolescent's bulwark against distraction is the inner strength he derives from family life.

Dr. Frank M. Buckley of Boston College Graduate School says, "The discipline, love, and sense of security teenagers get from parents ultimately determine the sense of values and their inner motivation toward duty—which includes school work and later, their jobs."

THE COST OF CREDIT

Many people buying merchandise on the installment plan are unaware of how much credit actually costs them. They are more concerned with the amount of the monthly payment than with the difference between the cash and credit price.

Credit rates may vary from store to store and from time to time. Consumers should shop for credit as carefully and comparatively as they do for a washing machine, an automobile, or any other commodity. Such bland inducements as "bank-rate financing" cannot always be accepted at face value. The chart below translates some typical finance charges into terms of simple interest. —J. K. O'DOHERTY



THE PATHFINDERS

by TSgt. Harold L. Craven

"Along the trails to the Klondike the weary and unburied bones of hardy pioneers who fell from exhaustion and privation, as they followed the glistening specter of gold, will turn over in awe at flyers who pass over their resting places in the twinkling of an eye. The Age of the Air is upon us and it is beyond the power of mere man to hamper its magnificent development."

These words, published in *Air Service News Letter,* heralded the beginning of an ambitious undertaking, a four-plane aerial expedition from Mitchel Field, New York, to Nome, Alaska, on July 15, 1920.

The journey ahead was no mere grandstand play, although the Air Service hoped it would result in new support for military aviation. The primary reason for the flight was to establish an air route to the northwest corner of the American continent so that, should the need arise, Air Service units could be moved to the continent of Asia by direct flight. During their stopover at Nome the flyers planned to make a 100-mile hop to Cape Prince of Wales, a point approximately 50 miles from Asia.

Pilots and mechanics chosen to man the four de Havilland biplanes were considered the best available. Capt. St. Clair Streett, expedition commander and pilot of aircraft number one, had been one of the first American flyers overseas in the recent war and had been cited by General Pershing for his service in France. He was qualified in almost every modern type of airplane. Sgt. Edmond Henriques, his mechanic, was one of the Air Service's top Liberty motor specialists.

Second in command, and pilot of the second machine, was 1st Lt. Clifford Nutt. He would share the controls with 2d Lt. Eric Nelson, engineering officer for the expedition. These two flyers had more experience in Liberty-powered de Havillands than any other pair of aviators in the Air Service.

The third machine was piloted by 2d Lt. C. H. Crumrine, a highly experienced pilot who would double as photographic officer. Liberty motor specialist Sgt. Albert T. Vierra was his mechanic.

Plane number four was piloted by 2d Lt. Ross C. Kirkpatrick, a veteran of the previous year's Transcontinental Reliability and Endurance Race. He had several hundred hours of cross-country flying logged. Master Electrician Joseph E. English, who could take a Liberty motor apart and reassemble it blindfolded, was Kirkpatrick's mechanic.

The day the four planes departed Mitchel Field was one of the worst encountered on the entire flight from the standpoint of visibility. The airmen couldn't see the ground from a height of 1,000 feet, so three of the planes dropped to 500 feet. Captain Streett, however, climbed to 8,000 to get out of the fog and got separated from the others who proceeded to Erie, Pa. The three planes waited for him there and he joined them on the following day.

Heavy rains soaked the field at Erie, making takeoff conditions hazardous. When the squadron made the takeoff run through mud and water, Crumrine's plane nosed into the marsh at the end of the runway. He managed to cut the engine in time to avoid damage to the propeller. A quick check of the airplane showed no damage, so another takeoff attempt was made, this time successfully.

Leaving Erie the flyers cut directly across the lake against a strong headwind for a distance of 85 miles. They were out of sight of land for an hour and a quarter and, due to haze, had no horizon line to guide them.

Grand Rapids, Mich., gave them a royal reception. They flew to Winona, Minn., on July 22, where they received an invitation from the Twin Cities Aero Club to land at St. Paul and Minneapolis. Although this was not a scheduled stop, they accepted and remained there until the 24th, then took off for Fargo, N. Dak. This flight took them out of the forest and lake region into flat grain country where prairies were so level that it seemed as though they might have taxied over them. After resting overnight at Fargo they flew to North Portal, a railroad junction just across the Canadian border.

On July 26 the expedition left North Portal for Saskatoon, Saskatchewan, making 310 miles in three hours aided by the first tail winds encountered on their journey. They remained there overnight as guests of the Canadians then departed for Edmonton, Alberta.

About 100 miles out of Saskatoon they left the prairie country and flew over forests, lakes, and rolling hills, some of them more than 6,000 feet high. Upon reaching Edmonton Sergeant Henriques found a leak in the fuel tank of Streett's airplane and they were delayed three days making repairs.

The first attempt to leave Edmonton was unsuccessful. They traveled 100 miles at 300 feet altitude, due to low clouds, then had to turn back when conditions became worse. On the first of August they tried again and despite a stiff headwind managed to reach Jasper National Park. There they landed on an airfield measuring 600 yards in length, one of the best on their route, and were greeted by the game warden who provided them with tents and a Chinese cook.

"By this time," Lieutenant Nutt said later, "we were all feeling very much in need of a bath. We set out expecting to take a dip in the Athabasca River, but were advised against it because of the extreme coldness of the water. So we chose instead a little lake about a half mile away which we were told was a good bathing place. Someone stuck his foot in the water to test it and remarked that if the Athabasca was colder than this, then it must be a record breaker. We took off our clothes to brave the frigid temperatures anyway, but some of us still hadn't quite made up our minds to dive in. Then a swarm of mosquitoes, the most ferocious I have ever encountered, made up our minds for us. It is impossible to conceive of the multiplicity and ferociousness of the mosquitoes in this region. Once we had escaped them by getting into the icy water we dreaded to get out and face our flying tormentors."

By building smudge-fires around their encampment and sleeping close to a bonfire the flyers managed to get a little rest in spite of the mosquitoes. They got off to an early start next morning and three planes reached Prince George, British Columbia, in two hops. Captain Streett's plane had run into difficulties shortly after leaving Jasper. Sergeant Henriques was at the controls of the biplane when it caught fire due to the oil tanks being too full and overflowing down the exhaust pipe. The sergeant quickly put the DH4B into a sideslip, intending to land in a river, but as they descended the change of angle of the plane stopped the flow of oil and the fire extinguished itself.

The others received a wire from Streett explaining his delay. By this time darkness had fallen and flares were lighted to guide him to the runway. The outline of the field was somewhat indefinite, however, from Streett's position. He came in too fast, overshot the landing area, and struck a stump that sheared four feet off the end of his left wing, breaking both main spars and tearing all the ribs out. The left half of the horizontal stabilizer and the left aileron were also damaged. Fortunately neither occupant was injured.

The nearest replacement wing available was at Mather Field, Sacramento, Calif. Rather than delay the flight awaiting its delivery the aviators decided to do the best repair job possible and continue their journey. With the help of a local carpenter who had some excellent spruce timber the wing was rebuilt. Kirkpatrick obtained some cellulose nitrate, unrefined banana oil, and anil acetate and mixed it together to form aircraft dope. The flyers pooled the aircraft fabric they had brought along for just such emergencies, covered the repaired wing with it, and applied the "dope." It wasn't good "dope," however, for the linen fabric turned out to be almost as flabby after it had dried as it had been before application of the concoction. They decided to use it anyway.

Weather conditions resulted in additional delays at Prince George, however, and they were guests of lumberjacks in the frontier town until August 13.

The expedition reached Hazleton without difficulty and remained there overnight, then set out for Wrangell, Alaska. Maps indicated that this territory had mountains ranging in heights from 5,000 to 7,000 feet. It was known, however, that this leg of their journey was over country largely unexplored. They had to climb about 10,000 feet to negotiate some of the terrain. When they arrived over Wrangell they headed for the only landing area available, on little Sergeif in the Stickine River.

Residents of Wrangell had learned earlier in the day of the impending arrival of the flyers. When the first word came in the mayor declared a holiday. Flags were posted on all the principal buildings and mill whistles and bells were sounded to inform everyone in the vicinity that the planes were coming. Throughout the afternoon small boats headed to Sergeif Island, loaded to capacity with passengers. Barrington Transportation Company's *Hazel B No. 3,* floating a scow which was loaded to the limit with passengers, had already reached the island, having departed at noon. As no word had been received from Hazleton regarding time of takeoff there was no way of guessing when the planes would arrive. The hands of the clock turned relentlessly. One o'clock, two, three, four. Some discouraged spectators began making preparations to go home when there was a shout: "Here they come!" The four planes roared over the landing area, circled once, then machine number four, piloted by Kirkpatrick, landed, followed by the others. Streett came in last, seven minutes after Kirkpatrick had touched down. The flyers partook of Wrangell's hospitality until August 16, then continued northward.

From Wrangell they traversed a route patrolled by Canadian Mounted Police and dotted with neat way stations at intervals of 40 to 50 miles. The flight took them across Lake LaBarge, so well known to readers of Robert Service's poetry. Lieutenant Crumrine blew a tire when he landed at Whitehorse. In order to continue the trip he used rope to pack the casing and wrap the outside. The makeshift repair job permitted him to go on to Dawson where they touched down in time for the Discovery Day celebration. On this date just 22 years earlier the first Alaskan gold had been found on Bonanza Creek, and everyone was making the most of the holiday. The people not only welcomed the flyers—they practically gave them the town.

The flight to Fairbanks was a desolate journey until they encountered a clearly marked trail cut 19 years earlier under the direction of General William Mitchell, then a 21-year-old lieutenant. Purpose of the trail was to establish a telegraph line which was to connect with a cable to Siberia, a project which was later abandoned.

Approximately 2,000 people, the entire population of Fairbanks, greeted the expedition when it arrived on August 19. The community of Ruby was reached on the following day. A sand bar appeared in the river at the right time and they landed the planes on it, after Streett decided it was a safer spot than the landing field previously selected.

Enroute to Nome, on August 23, the aviators flew along the coast of the Bering Sea where they passed over a school of white whales and several long-haired seals. They saw a herd of reindeer at Golovin Bay. Weather and visibility were bad for a large part of this final leg of the flight however, but a combination of skill and good fortune enabled them to reach their destination without mishap.

The flyers received numerous souvenirs during their trip, particularly at Fairbanks and Nome. These included gold nuggets, reindeer-hide parkas, and honorary memberships in various local organizations. Dawson citizens made them honorary members of both the Yukon Pioneers and the Alaskan Pioneers, and at Whitehorse, Yukon, they were presented memberships in the Squaw Mans' Union. Most interesting of the souvenirs, however, were Alaskan dogs which were part wolf and part Alaskan Husky.

Expedition members rested at Nome until August 31, except for brief local flights, including the hop to Cape Prince of Wales and back. They returned to New York along the same route, arriving at Mitchel Field on October 20, accompanied by an aerial fleet that joined them over New York City and escorted them to Mitchel.

After being honored for their history-making flight by New York City the flyers were ordered to Bolling Field near Washington, D. C. There they were given red-carpet treatment by high-ranking military and civilian officials.

They had flown the 9,000-mile round trip in approximately 110 flying hours without having changed engines and without injury to any of the flyers. Proponents of military aviation saw in their accomplishment a promise of many advantages for the future, including eventual establishment of aerial mail and passenger service to Alaska.

All roads currently lead to Rome,

the site of the 1960 Summer Olympic Games and the goal of

AIR FORCE ATHLETES

by SMSgt. Hal Bamford

Nearly a score of Air Force athletes are currently engaged in a pitched battle to uphold the prestige of the United States in international competition.

With rare exception, the traditional military firearms are not a part of this worldwide struggle. Rather, the spiked shoes of the trackman, the padded gloves of the boxer, and the varied equipment which signifies games common to inter-nation competition will be the battle hardware.

While representatives of all the American military services garnered places on the final squad which is representing this nation in Rome from August 25 through September 11, Air Force athletes may well have the toughest job of living up to past performances.

During the 1956 competition in Melbourne, Australia, the men in blue gathered no less than seven gold medals, the symbol of a winning effort; two silver medals and four bronze, emblematic of second and third respectively. Of these Air Force representatives, only a few have returned to compete in Rome still wearing the uniform. Others will probably also make the squad, but have returned to civilian life in the interim.

However, the air arm received a running start toward defense of their interservice "championship" in medal production during the VIII Winter Games at Squaw Valley, Calif., earlier this year. Here, the sole USAF representative, A2C Weldon H. Olson, played a vital role in the U. S. ice hockey victory. As a matter of fact, it was Olson's goal which spelled defeat for the Russians in the crucial contest and opened the door for the first American gold medal in the history of this event.

Certainly, USAF representation in the summer version of the games will be considerably enlarged over the solo role of Airman Olson, but it is also a virtual certainty that it will not reach the total of four years ago. At press time, final selections had not yet been made although nearly two dozen airmen had survived a multitude of summer-long elimination trials and heats and remained eligible for the trip to Rome. Best estimates at this time placed USAF participation somewhere between 12 and 18.

Several of these seemed like better than average bets to carry the Stars and Stripes to the crest of the winner's pedestal. Principal among this group were Lt. Karl K. Schwenzenfeir of Plattsburgh AFB, N. Y., a gymnast who was also a member of the '56 team; and Lt. Russell A. Cammilleri of Lincoln AFB, Nebr., a member of the wrestling team.

USAF also had an excellent chance of seeing their colors carried forth by Capt. Adolf J. Weinacker, a veterinarian who was a member of the 50,000-meter walking team in '48, '52, and '56.

Early in June, Eddie Southern, star hurdler of the University of Texas, graduated and entered the Air Force to fulfill his ROTC commitment. In 1956, Lieutenant Southern, then an 18-year-old undergraduate, ran the demanding 400-meter hurdles event, and most observers agree that he is a likely candidate to once more represent this country.

Additional track and field men should also score highly and other airmen will probably gain additional berths in several diversified events. A modern pentathlon includes shooting, cross-country, riding, swimming, and fencing. Other major events will be boxing, water polo, rowing, and yachting.

USAF also scored high in the noncompetitive ranks when Lt. Col. Charles E. Allard, Chief of the Athletics Branch, DCS/Personnel in Air Force headquarters, was elected as one of the track and field managers for the squad, the only Armed Forces representative so honored.

It was through his efforts that Air Force hopefuls found the finest of pre-elimination training waiting for them. Colonel Allard called upon a cross section of his wide acquaintances in the sports world to assist, and such notables as Bill Hargis and Clair Bee, two of the most highly regarded coaches in the nation, donated their time and efforts to guiding the training of track and field candidates and the basketball team respectively.

Regardless of the final outcome of the friendly interservice rivalry or of the more important international competition, it appears certain that once again, USAF's men in blue will carry high the banners of both nation and service in the centuries-old International Olympiad.

You can, too, eat the daisies

You won't find a breakdown of the nutritional constituents of beetles, snakes, and ants in the standard texts on food composition. And housewives—if they ever thought of it—would be hard put to come up with a recipe for preparing an entree from birch bark.

But some 200 sixth graders from elementary schools throughout California's Yuba and Sutter Counties can give you accurate and detailed accounts on these admittedly unsavory subjects. And they base their knowledge on first hand experience, gleaned from a unique and beneficial Outdoor Science Education Program in which survival instructors from SAC's 5th Bomb Wing, Travis AFB, Calif., play an unusual part.

For three years now, USAF survival experts have conducted classes in emergency shelter construction, food procurement, signalling and other subjects vital to survival in isolated wooded areas. In the scenic pine forests 40 miles northeast of Chico, the school kids have bravely swallowed beetles, partaken of colonies of tangy, high protein ants, munched water cress, nibbled the inner bark of tree limbs, and tacitly agreed that hunger is the better part of squeamishness.

According to Dick Schwalenberg, Director of Outdoor Education for the counties, the experience results in a "greatly increased motivation toward science" among 7th and 8th graders who have been through the Outdoor course. Further, Robert J. Wapple, Yuba County Superintendent of Schools, declared in a recent letter to Col. Lucion N. Powell, Special Assistant to the Commander, 5th Bomb Wing, that "In every single evaluation we have had made of the program, from our own teachers to the California State Department of Education, states that the most educational, interesting, as

Danny Walters, 11, of Dobbins Gail, Calif., gamely but cautiously accepts a tasty beetle offered by SSgt. William Hankel of 5th Bomb Wing Survival Team.

Instructor explains how shelter can be fashioned with little effort from logs, pine boughs, and whatever is at hand.

well as exciting part of the whole instructional program was the unit on survival."

A 15-year-old Marysville school girl, Sue Shippen, demonstrated last fall that the training has a definite practical value as well. Lost for three days in the Sierras when she became separated from her father whom she was accompanying on a hunting trip, Sue was found in an abandoned cabin in far better physical condition than many of her rescuers.

She was quite candid in her explanation of why she survived her ordeal so well. "I remembered the survival instruction I had from the Air Force during the Outdoor Program I attended three years ago." Sue was in such good shape she went back to school the day after her "rescue."

Because the camp staff is small—a director, two regular teachers, a couple of student teachers, and 18 senior and junior assistants from Marysville High School — Forest Service people and Game Wardens as well as the Air Force Survival men lend a hand. This also eliminates the problem of finding teachers qualified for many of the outdoor subjects, and guarantees reliable, professional instruction in forestry matters.

Nobody can say for sure how many Sue Shippens may be saved because of this program. Yet even if no other student is faced with the task of surviving in a wilderness, the character, confidence and self-reliance gained by the school children of Yuba and Sutter Counties should do much to rekindle the spark of the pioneer spirit that opened the West.

—T. R. STURM

With wrinkled nose, Betty Fowler examines snake at close range under the watchful eye of SSgt. Bobby Moran.

Instructor demonstrates how to prepare a snake for food in emergency. Apparently the emergency would have to be extreme for the young lady in the rear.

Department of the Air Force Seal

The Department of the Air Force Seal, shown on the opposite page, is reproduced each month on the front cover of THE AIRMAN. The Seal, authorized by Executive Order of the President of the United States in November 1947, is the impression used on official documents and records of the Department of the Air Force.

In addition to its appearance on the Honorable Discharge Certificate and certain other official documents, airmen will remember seeing the Seal used in connection with approved training films or television productions. The Administrative Assistant, Office of the Secretary of the Air Force, is solely responsible for approving use of the impression on official departmental documents and records. The Director of Administrative Services is responsible for approving the manner in which the seal is used on publications and other printed matter. The Deputy Chief of Staff, Personnel, USAF, is responsible for approving use of the Seal, or components of it, on insignia, flags, medals, and similar items.

A precise code of usage governs display of the Seal in all circumstances. Authority exists, however, for use of components of the Seal for appropriate purposes which do not detract from official dignity. The Coat of Arms, meaning the Crest and Shield with encircling stars, appears on the buttons of Air Force uniforms, on Air Force flags, pennants, and new Air Force commendation medal. The crest may be used by commanders on organizational emblems approved by appropriate authority. Some uses of the Coat of Arms require specific authorization by Headquarters, USAF, while good taste and dignity are expected to apply in all cases.

The center portion of the Seal, surrounded by the 13 stars of the original colonies, is the Coat of Arms consisting of the Crest and the Shield. The Crest includes the American bald eagle, symbolizing the United States and its airpower, and the heraldic wreath beneath the feet of the eagle. The cloud formation behind the bird depicts the creation of a new firmament—the Department of the Air Force.

The Shield, immediately below the eagle, is divided horizontally into two parts by a line representing clouds. The upper portion of the Shield bears the most significant element of the device—the heraldic thunderbolt, symbolic of the striking power of the Air Force.

In 1947, prior to enactment of the National Security Act which established the three military departments, the Office of the Quartermaster General prepared a study of flags and seals for the services. The preliminary drawings of the Air Force Seal were first exhibited in the office of the Secretary of the Air Force, and a conference was arranged among approximately 30 general officers to make the final determination. The original design featured a green-colored background and included a drawing of the Wright Brothers' first aircraft. It was decided at this conference that the background of the Seal should be blue rather than green, and that a symbolic drawing should replace the Wright plane.

At this point Mr. Arthur E. DuBois, a civilian employee of the Quartermaster General, sketched a drawing of Jupiter's thunderbolt on the reverse side of the design under consideration. After some discussion of the significance of the thunderbolt, the conference agreed to adopt this as the basic symbol for the official Air Force Seal.

The greatest of all the gods of classical mythology was called Zeus by the Greeks, and Jupiter or Jove by the Romans.

Jupiter, according to the story, ruled over the empire of heaven and the air. Pluto, a subordinate god, held sway over the infernal regions, and Neptune, another deputy, had charge of the sea. The earth was under joint control of all three, but Jupiter was supreme, and all the gods periodically gathered at his palace on Mount Olympus to receive his counsel and settle the affairs of men.

As judge and ruler of gods and men, Jupiter was often pictured seated on a throne with a scepter in his hand. As commander of the forces of nature, he was represented as riding across the sky in his thunder-car, wearing a storm cloud as breastplate, and hurling the thunderbolt at his enemies. The thunderbolt was his weapon, the rainbow was his messenger, and Nike, the goddess of victory, was his attendant.

Classical mythology contains many accounts of the fabulous exploits of Jupiter, including his conquest of the Titans, a race of massive, dim-featured beings who possessed great strength, but were dull to beauty, intelligence, and light.

As a primary military instrument dedicated to the preservation of justice, law and order, and honor, this Air Force association with Jupiter, father of the gods, seems singularly appropriate.

DEPARTMENT OF THE AIR FORCE
UNITED STATES OF AMERICA
MCMXLVII

A position of general supremacy in the aerospace must be maintained . . .

By holding general aerospace supremacy the United States is in a position to exert influence to restrain aggressors from the use of force and to encourage compliance with acceptable courses of action. This capability increases the Government's freedom of decision in pursuing its objectives.

AFM 1-2